BIG K

THE HIGHLY COMICAL APPLE MacINTOSH... 85p

STICKS MAY BREAK...
Controller Review p.34

SABRE WULF MAP!
All 256 locations laid bare

Plus Amstrad Review/
Letterbase/Dorkslayer
Arcade Punch-out

No6
SEPT

GAMES, UTILITIES
BODGES & DODGES
for COMMODORE 64,
ORIC, SPECTRUM,
VIC, and BBC 'B'!

AFTER THE CRASH
Atari & Imagine
— The End of an Era?

KOKOTONI WILF

'Kokotoni Wilf is an arcade adventure whose undisguised intention is to steal the title of "best arcade adventure program bar none" from Jet Set Willy'.

As Kokotoni Wilf you must recover all the pieces of the legendary Dragon Amulet (which has been scattered throughout time) for your master the great magician, Ulrich.

Throughout the quest Wilf comes up against many dangers from huge lumbering prehistoric dinosaurs, to hostile alien robots, but the reward for recovering all the pieces warrants the risk.

The 48K program features a number of major advances over Jet Set Willy. The games designer, Elite, stresses that each of the games 60 plus screen settings is genuinely high resolution, as opposed to psuedo hi-res, and doesn't require a title to explain what you're looking at. Furthermore, the sprite characters are of cartoon quality and exhibit their own personalities.

Impressive claims. Jet Set Willy fans will no doubt feel both sceptical and intrigued .....

Watch this space!

48K Spectrum and Commodore 64
available Sat. 15th September.

elite

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THE END IS NOT NIGH

You may have noticed that we're a bit late this month. Our apologies. The reason was a reappearance of that perennial Bug in The Great British Operating System — an Industrial Dispute. This caused a wholesale crash within the IPC mega-network, and affected hundreds of magazines, not just BIG K. However, by dint of late nights and unbelievable amounts of tepid coffee we got it together — our largest issue yet.

If you find a bug or two . . . don't call us. We already know about it.

We've also cleaned up (by popular demand) our Reviews Ratings system (see page 18-30). We hope you'll approve.

This month's Cover Story concerns the long-predicted disaster that's overtaken two archetypal computer/games companies — one American, one British (see page 43). In America some pessimists are saying It's All Over. We don't think so — though it is clear that we're going through the end of the First (or is it Second?) Age of Personal Computing. On reflection, it was probably necessary to shake out some of the old assumptions, so that the survivors can clean up their acts.

A great example of what lies just around the corner can be found on page 90. In our view, this — and not just more games — holds a clue or two to the computer future. May it arrive sooner rather than later — and, one hopes, without any more tragedies and disasters.

TONY TYLER

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BIG K in the land of J.R. and computer comics. p.88.

From hang gliding to meteor bashing. BIG K games listing. p.52 & 42.

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SABRE WULF

ULTIMATE
PLAY THE GAME

48K SINCLAIR ZX SPECTRUM

£9.95

Auntie/Acorn Love Affair Smoulders On

THE BBC has renewed its contract with Acorn Computers. This puts an end to speculation that Auntie Beeb might make a new partner of Uncle Clive, or even (long shot) Cousin Commodore. The BBC micro, as we know it, stays for another four years.

The Corporation also has plans for a new TV computer series, as well as new books and software. Although Commodore have been selling hardware like hotcakes in schools, of late, they've still a long way to go to catch up with the mighty Beeb, which claimed three-quarters of the total computers bought by schools last year.

Nice to have friends in high places.

Subtitles are on page 94 of your Spectrum

TURNED ON by Teletext? No? Pity. Because if you were — and if you also happened to be a Spectrum owner — joy could be yours mucho pronto since OEL have now produced a Teletext adaptor for the Little Black Box From Cambridge. Priced at a cool £145, the TTX 2000 plus all vital bits is available from OEL Ltd., North Point, Gilwilly Estate, Penrith, Cumbria. CA11 9BN.

Credibility Note: OEL are also the designers of the award-winning Prism VTX 5000 modem.

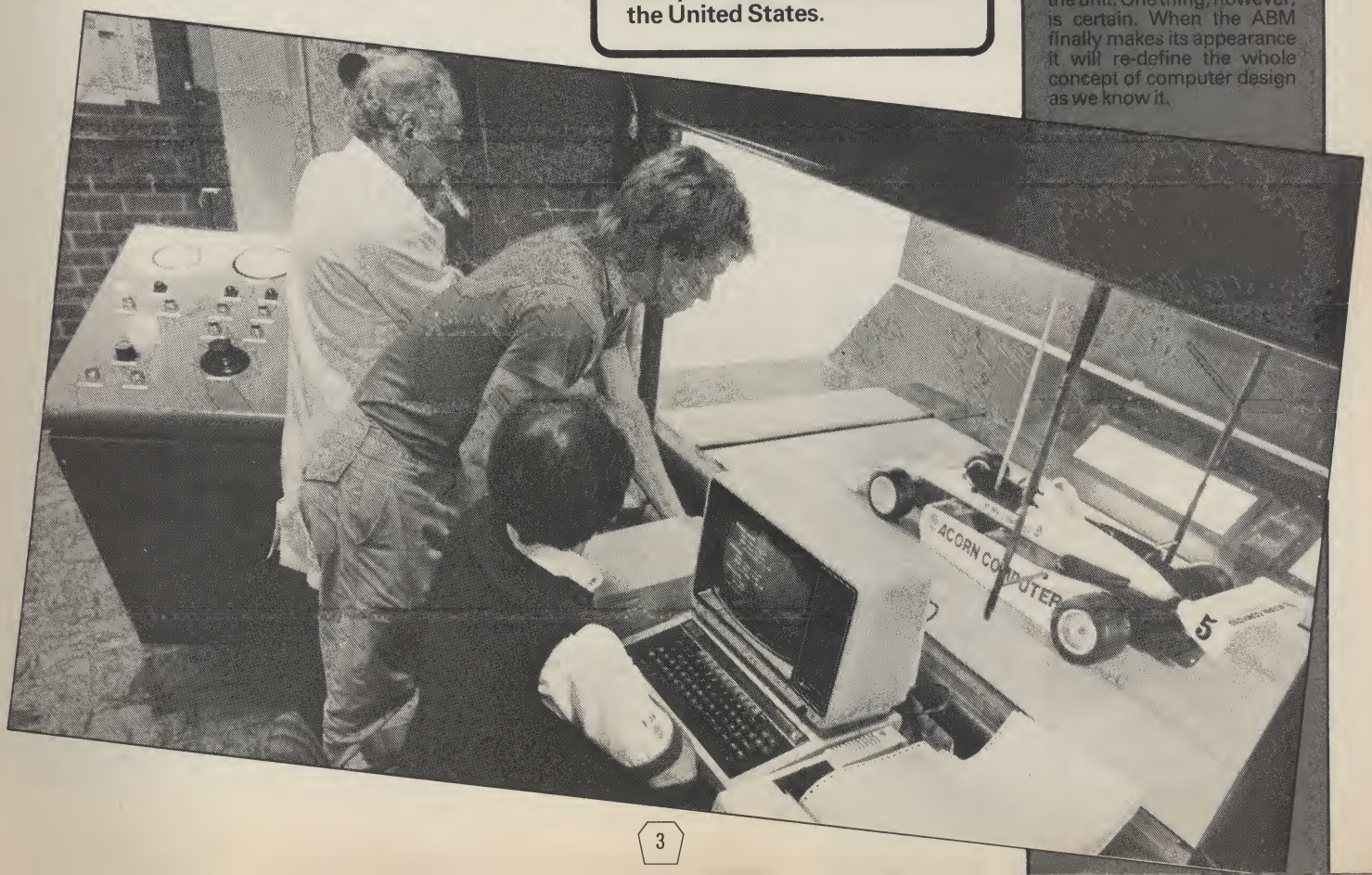
BUG-BYTE SIGN ROBOT HAM

VETERAN SCOUSE software house Bug-Byte have successfully negotiated a deal to produce computer games based on TV's 'Automan' series. Currently being storyboarded, the first game in the series will be in the shops (Spectrum 48, CBM 64) early next month.

NB: Although a successful show in the UK, 'Automan' has reportedly bombed out badly in its country of origin, the United States.

Acorn ABM – First Sighting

WITH RUMOURS of the long-waited Acorn business micro growing stronger each day, BIG K believes it has uncovered photographic proof of the existence of the new wonder machine. The picture shows the ABM undergoing final evaluation at a top secret Acorn 'safe house' somewhere in England. Industry observers will be quick to note the revolutionary look of the ABM with its slick, executive styling which will undoubtedly ease transportation of the unit from one location to another. The most exciting features are the four massive disc drives, one on each corner of the unit. Obviously compatible with no other system currently on the market, the capacity of these drives can only be guessed at. Speculation surrounds the ABM's rearward configurationwhich some have said must be a massive heat sink, or more ominously, a possible dreaded Sinclair-type dongle which may be done away with at a later date. The ABM operator has a custom-designed work area built into the centre of the unit, between the side ROM and RAM packs. Unconfirmed reports indicate that limited protective clothing may be required to extract the full potential of the unit. One thing, however, is certain. When the ABM finally makes its appearance it will re-define the whole concept of computer design as we know it.



BIG K

ENTERPRISE BOOST

THE LONG-awaited Enterprise micro, now due for release next month, has had its market chances greatly enhanced by the news that the mighty Prism company are to distribute the machine in the UK.

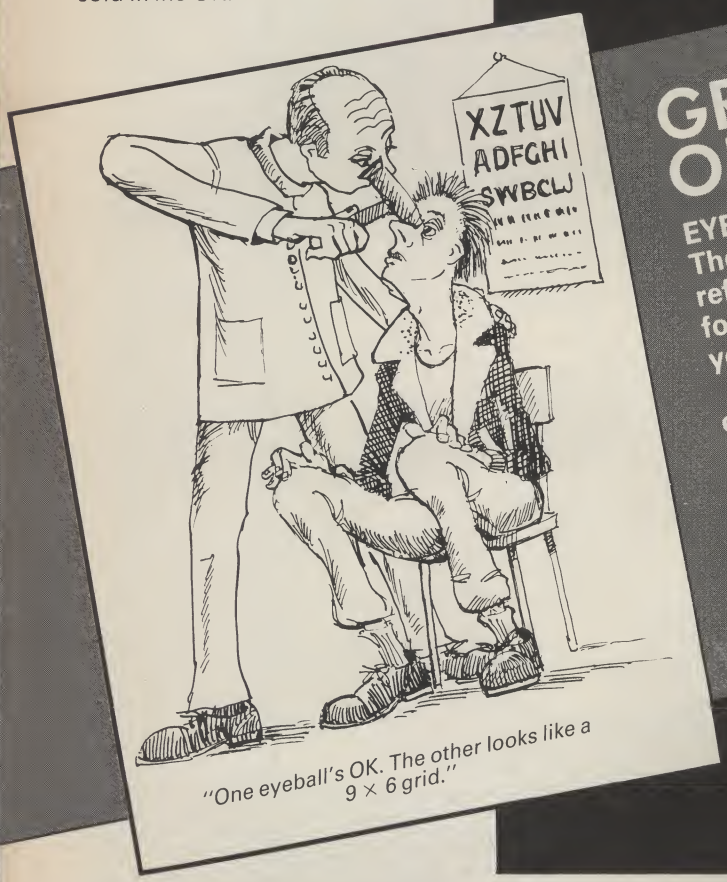
Prism currently distribute 20% of all small computers sold in the UK.

GRANADA'S MICRO MOVE

WHEN NEXT renting a TV or video from Granada check out their range of home computers. Yup, the high street rental giant is moving micros into over 100 of their 450 stores as part of an ". . . Important and significant step in the company's development strategy."

Initially the micros (Spectrum, BBC, Electron, Commodore 64 and Vic 20) will be offered for sale only, although a company spokesman didn't rule out the possibility of a rental scheme, ". . . If the situation arises." That sort of move could lead to a massive boom in home computer usage in Britain, already a market valued at around £400m in 1984.

Granada is backing up the micros with a wide range of software (games and educational) and peripherals with more being introduced all the time.



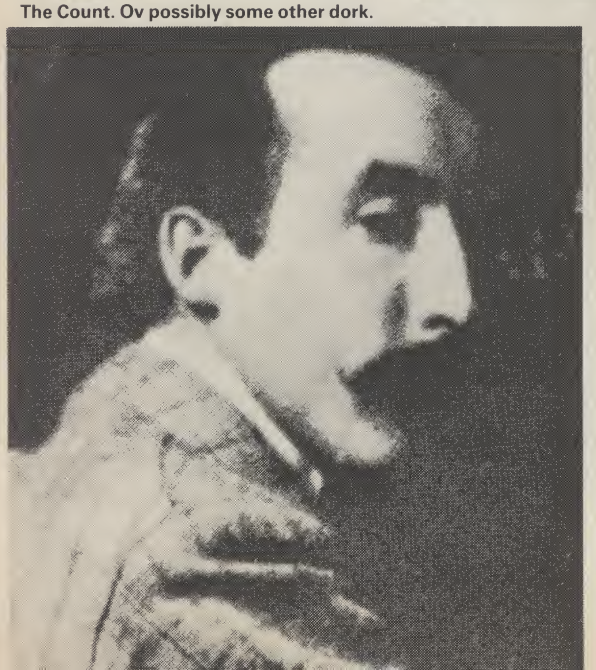
"One eyeball's OK. The other looks like a 9 × 6 grid."

GREAT VIDEO DISEASES OF OUR TIME — No 71

EYES CROSSED? Headache? Feeling generally lousy? Then start worrying — you're suffering from 'specular reflection' — in other words, eyestrain from continually focusing and re-focusing on, er, out-of-focus images on your screen. And it can cause permanent eye damage. Luckily for civilisation as we know it, a Tyne & Wear company called Romag have come up with an eye-saving widget called CEAF, which is a laminated screen filter specially made to nullify all those harmful effects. CEAF is £20 — considerably less than American-made screens which have been selling (or not, as the case may be) for five times that figure. So if your right eye is looking straight at your left ear (and vice versa), contact them at Patterson St., Blaydon on Tyne, NE21 5SG, pronto.

Don't cry for K-Tel, it won't be seen on software any more. But look out for *Frontrunner*, the new name for all K-Tel games. The first two titles under the new banner will be *Storm Warrior*, a 12-screen arcade-adventure, and *Space Professor*, an educational game, both for the CBM 64.

The Count. Ov possibly some other dork.



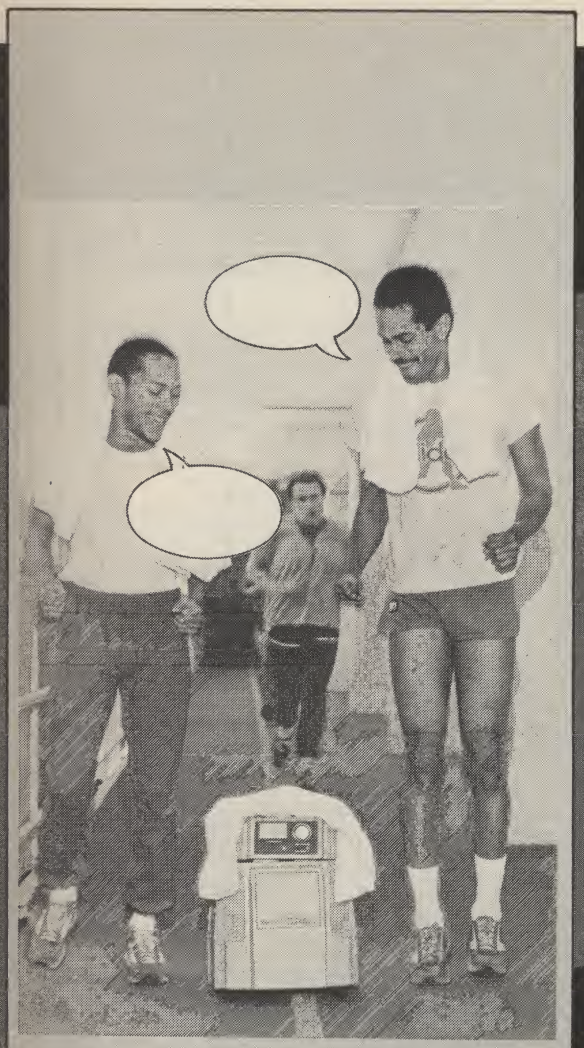
COUNT ON IT!

FED UP with continually being dumped back at the Starting Gate every time you lose a life in a computer game? Then relief is on the way, in the form of *Hercules*, a new 50-screen epic from a new programmer, a dude who handles himself The Count of Mantissa. On losing a life in *Hercules*, a random access routine is invoked whereby you are plunged into any one of the 50 sheets in the game.

This satisfying new lick comes to you courtesy of a new company Interdisc, financed by Island Records whose avowed aim it is to go for quality not quantity. Nice to hear of new companies still starting up.

GARBAGE IN.

DATELINE LIVERPOOL, and stirring scenes as mobs of enraged creditors fight in the street outside *Guess Who*'s former offices, colliding with each other and with bailiffs removing the flash furniture. Seems there's no decent wine left in city centre stores, since *Guess Who* had imbibed most of the choicer vintages in the last six months, leaving said stores with *Nicolas Rough Red* as the top end of their wares . . . Also despondent: Wirral niterie *Atmospheres* (who wanted *Guess Who* to buy them out six months ago),



Fill in the speech bubbles with appropriately pungent (not to mention plangent) comments and send it to BIG K (Robot), 1038, IPC Magazines, Kings Reach, Stamford Street, London WC2 9LS . . . the winner will receive a super-fantastic prize from the BIG K MYSTERY SOFTWARE HOARD, so be sure to include details of any computer(s) you own . . .

Join 1000 other players in *Starnet*, the new participation Galactic strategy game currently running on Micronet. Over 340 maps and 3000 stars, each with its own special function, give players a lot of room to move. Game object is to become Emperor and hold on to the title. A prize worth £150 goes to the despot who captures the Throne.

ULTIMATE PLAY THE BEEB!

THE BEEB is the latest machine to benefit from Ultimate's original and top-selling game, **Jet Pac**. The BBC version will be available for the princely sum of £7.95. As in its Spectrum and Vic 20 incarnations the game features 16 waves of aliens and four different spaceships to assemble, each comprising three sections. As yet **Jet Pac** is the only one of Ultimate's range of Spectrum games to be converted to other machines. According to the company, although **Atic Atac** has sold better than **Jet Pac** it is **Jet Pac** which seems to be played and enjoyed more.

. . . GARBAGE OUT

by the Shadow

sadly missing the £1,000 *Guess Who* were wont to blow in a single merry evening . . . And on a final note, by eerie coincidence it seems that *Atari* were on the point of bailing *Guess Who* out — until the arrival of *Jack Schlemiel*, who nixed the takeover. Result: *Atari* went under and so did *Guess Who* . . . yes, it's an interlinked old world sure enough . . .

And now for something completely . . . similar. After the universe-shattering success of *War of the Worlds* by *Jeff Wayne* ("Who he?" asks reader *H.G.W.* of Tooting), famed East End software house *CRL* have now acquired the rights to *The Magic Roundabout*; rumours to the effect that *Richard Taylor* will star as *Dougal* and *Clem Chambers* as *Zebedee* remain uncomfirmed . . .

Waves of reaction: in *The Times* (you've heard of that) letters now appearing claiming that computers in schools are a menace: depersonalising, dehumanising and removing the vital "interpersonal relationship". Also from the popular press: mounting flak about the American game *Mission to Moscow*. "It encourages war", say writers to *The Standard* and other popular evening broadsheets. Sure it does; just as maze games enforce visits to Hampton Court, Kong games are anti-anthropoid, PacMan games encourage "kids" to raid medicine cabinets in search of power pills, and adventures pressure users thereof to don antique armour and leap about with swords beheading dumbo correspondents to silly national newspapers . . . You really must forgive *The Shadow*: he's had a bad month . . .

SORD OF HONOUR

THE INTERESTING but largely overlooked CGL (Sord) M5 computer gets a boost this month with the release of eight new games for the machine. They are: **Bomber Run; Devil Bird; Intrique; Slots; Stranded; Wheels,** and two Triple Packs: **Simon, Granny** and **Spiders**; and **Squash, Lander** and **Raiders.** All the single games are priced at £5.95, while the triple packs sell at £12.95 apiece.

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Heroes of Karn	7.00	5.00
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Twin Kingdom	9.50	7.00
Decathlon	9.95	7.45
Evil Dead	6.99	5.49
Manic Miner	7.95	5.95

Please ask about CBM 64 disk software.

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U.K. UNDER ATTACK

"OVER-RATED, OVER-PRICED AND OVER HERE"?

UNIQUE TWIN-PRONG ATTACK THREATENS BRIT. MICRO INDUSTRY

AMERICAN-ORIGINATED software is headed for British shores in ever-increasing numbers. U.K. companies are springing up specifically to bring over top-selling American games and, in some cases, convert them to British micros.

Probably the most well-known of these companies to date is U.S. Gold, who scored a No. 1 chart hit recently with *Beach Head* for the CBM 64. In existence only since April, U.S. Gold told BIG K that they had deals signed with many of the major Stateside software houses and planned to release 27 titles before Christmas. These include Datasoft's *The Dallas Quest* and Synapse's *Zaxxon* — the 'official' CBM 64 version. Prices tend to be on the heavy side (not unknown where U.S. software is concerned — the Americans are used to paying around £30 for a game) at £14.95 per cassette. U.S. Gold believe that people won't mind paying such high prices for quality games.

Newcomer Statesoft was, naturally, born on the 4th of July this year and enjoys the backing of the large Spectrum (no relation) group of retail outlets. It has the rights to handle First Star releases for the good ol' 64 and the first two, *Astro Chase* and *Flip 'n' Flop*, should be out by now. A second pair, *Boulder Dash* and *Bristles*, are due out next month. Pricing wasn't confirmed when we talked to Statesoft but £8.95 for cassettes and £11.00 for discs were given as ballpark figures. Statesoft have the rights for translating all First Star titles to the ZX Spectrum but will probably be licensing these to another software house.

Cheetahsoft, with two Spectrum titles already out, has announced that it has aquired the rights to market Imagic games in Britain. *Moonsweeper* and *Dragonfire* will form the first wave of Imagic/Cheetahsoft releases for the Spectrum, in cassette form at £7.95 each. Other machines may be targeted at a later date.

Meanwhile, from the Land of the Rising Sun the mighty MSX machines surge like a tidal wave of Datsuns toward our tiny isle. Among them familiar names like Sony, Hitachi, Sanyo, Toshiba, National, Yamaha and others. All have one thing in common — MSX, the Microsoft-backed language that does away with incompatibility between microcomputers.

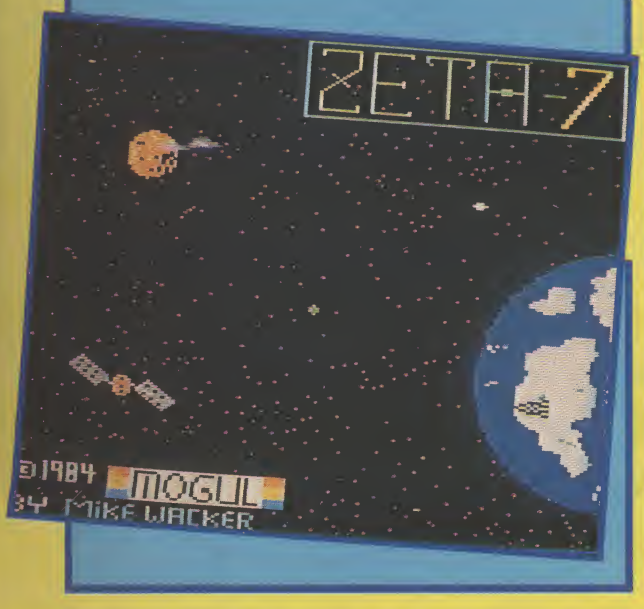
The roster of those who are planning MSX games looks like a who's who of the U.K. software industry: Quicksilva, Virgin Games, Artic, PSS, Bug-Byte, Silversoft, CDS, Ocean, Psion, Mastertronic, Mr Micro, Llamasoft, Salamnder, Audiogenic and Kuma. Over 40 companies in all are interested so far.

Despite scepticism in some parts about the impact MSX will have on the U.K. scene the Japanese companies have a lot of money (around £50m) and a lot of patience to get their product established. "We're not looking so much at Christmas 1984," one spokesman told BIG K, "but at Christmas 1985 and 1986."

MOGUL SOFTWARE

is claiming a unique "first" — in blagging the home computer rights to a major new US arcade game . . . before the latter has even hit the arcades!

The game? *Zeta 7*, a rotating shoot-'em-up in the grand tradition, written by US programmer Mike Wacker. By the time you read this Mogul's version for CBM 64 (cassette, with disc to follow) should be in the shops for a mere £7.95.



64 MARCHES ON

ACTIVISION, THE giant American indie software house, have now added the world's best-selling microcomputer — the Commodore 64 — to their list of target machines.

First games on CBM cassettes are: **Beamrider; Decathlon; River Raid; Pitfall; Pitfall II; H.E.R.O.; Zenji,** ***and*** **Toy Bizarre.** ***All but the last two are conversions***

The American company has also successfully sued Cornish outfit Microdeal, claiming that the latter's **Cuthbert In The Jungle** ***is a rip-off of*** **Pitfall.** ***Microdeal have given a High Court undertaking to shelve the Cuthbert game permanently.***

"I'll swap four of my tapes for your Activision."

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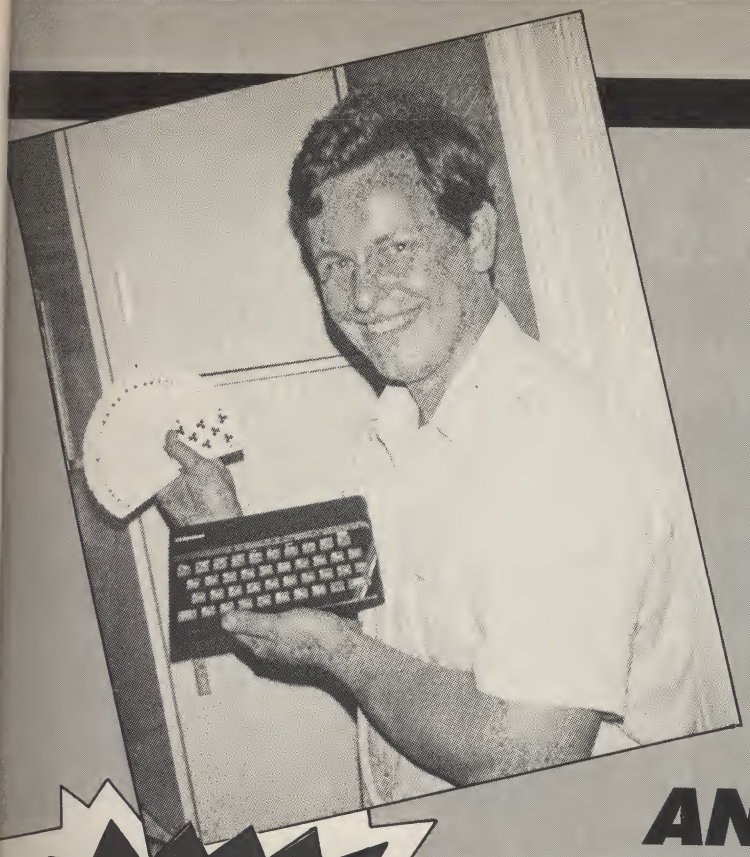

AND NOW, FOR MY NEXT PROG . . .

DAVID HAMBLY, member of the Magic Circle and micro-brat, has fused the two strings on his bow together to become nuncio to what may well prove to be a dread new breed — Computer Magician.

On-screen graphics display three playing cards, face down. The computer 'tells' one to Find the Lady (The Queen). *Cherchez la Femme* — geddit? The old three-card trick.

One points a trembling digit at an appropriate key. Wrong! Every time! Hambly reverses the trick. This time one shuffles three real cards and lays them down to match — but not be visible to — the screen "cards". One instructs the patient micro to Find The Lady, dammit. One of the screen cards turns to show the Queen. One flips the corresponding real card and . . . the bitch is there! Every, but every, time.

David Hambly's speciality is 'close-up' magic. That means that you can scrutinise his hands with a magnifying glass and still not suss how he makes you look a mug. **(We'll tell you one day, Nicky — Ed.)**

Hambly confides that micros suit his no-nonsense style of magic. Producing rabbits became frankly, old hat, **(watch it — Ed.)** and escapology just tied him down **(you're fired — Ed.)**

If you're (un)lucky you might come across the man and his micro performing near you one day. Run! No, check it out. David Hambly also likes to behead select audience members on stage. Well, who doesn't these days? ("It's great fun, you can play football afterwards!"). Failing that; if you own a ZX 81, you too can shrivel your friends into a humiliated pulp! David's simple booklet will teach you how to turn a micro-heist or two with cards and ESP. You'll need to spend some time practising, as — and here's the rub — ALL IS NOT AS IT SEEMS!

Meanwhile — I know something you don't know. Yes, how it's done. And I can be bought.

NICKY XIKLUNA

COMPUTER MAGIC with the ZX 81 costs £2.00, and is available directly from:
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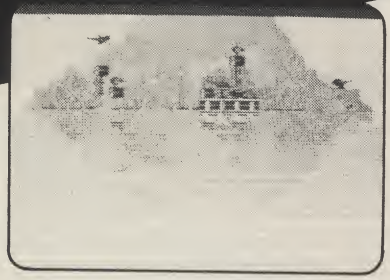
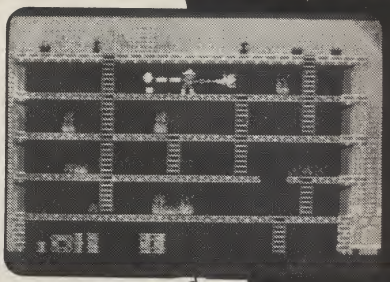
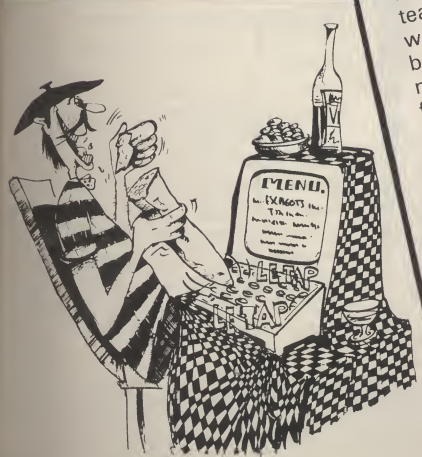
25 Knight's Way,
Hainhault, Ilford,
Essex 1G6 2RS.





Lousy French joke
"Knock, knock!"
— "'Oo's there?"
— "Hugo."
— "Hugo *qui?*"
—Hugo buy an Oric . . . *Moi,* I'll save up for one of zose IBMs."



FROGGY WENT A PROGGING

WHEN MATTEL went down recently, they left behind a team of 13 international software professionals, all booted up, as it were, but with nothing to run. This team of folks from France, Britain and Germany, became the lucky coven indeed when they took the plunge, put their cash and heads together, and came up with 'Nice Ideas'.

Despite the name, in 18 months, they've successfully transcribed and written for their old machines Intellivision and Intelligent Games, and have just finished writing 10 original games for Colecovision.

Bernard (l'artiste) plots and pigments every *pointilliste* pixel on his giant *Gauguinesque* graphs. He works closely with programmers to get both optimum playability and aesthetic clout out of available kilobytes. Bernard explains why Mattel originally needed a base in Europe, and what it is that Euro-talent can offer.

"American artists have a different kind of talent. They can draw things — like houses and cars, but they can't draw a portrait or a tree. Europe has a massive artistic heritage — and has spent hundreds of years training art schools. You just have to look at the work to see."

If this is the dawn of the computer age, la Belle France has left getting-up until the crack of midi. There has been little home production, and the importation of foreign machines has been hindered by France's ideosyncratic though efficient T.V. system, SECAM. Of the few that are sitting in homes (compared to GB), the Oric-1 and elderly Philips G7000 games machine seem to be the winners. Amazingly, computers are only now being introduced into schools.

Is there a danger of France missing out?

"Ah non," ripostes Bernard, "Computers will be big here.

"The French have been prudent in first giving themselves time to think, study and get ideas before going in."

Would he care to re-phrase that?

"Pardon?"

Rien du tout, pal.

NICKY XIKLUNA

This Dish is a Dish...

NICKY XIKLUNA gets into Interhack Technology

UNISAT 1, together with its back-ups 2 & 3, won't go aloft until 1988. When it finally does hang on in there, it'll be carrying 240 watts of British Telecom, and will be used for Direct Broadcasting (DBS). This'll eventually transform the legions of transmitters across the land into museum pieces. And absolutely no-one will have problems receiving Channel 4 ever again! In the meantime, other satallites are ahead, here, or rather there, and they'll be in use a lot sooner.

Spanning Stateside to Europe this year along the metasphere's busiest buzz-route comes SATSTREAM. It'll comprise a massive amenity, mainly, for the multinationals, extending big business satallite links across North America. Britain's already set-up to catch this stuff with mammoth receiving dishes (up to 32 metres diameter) at Goonhilly Down and Madley.

Even as I monologue away, the world's store of 1,000 or so satellites are twinkling above me. VCS machines in Space.

Most are controlled by INTELSAT, representing 108 countries. INTELSAT 'dishes' out satellites to official signatories — that's British Telecom and Mercury so far in the UK.

So exactly when and how micro/modem users gain access to satellite depends on who leases out a slice of the action from BT.

Indeed, software transmission has already been proposed by some candidates along the lines of software transmission by cable along the West Coast.

The technology exists. Every rooftop can be enhanced by its own monster gleaming receiver dish and antennae. Millions of menial and mediocre messages could go 22,300 miles in a vertical direction, bounce off the satellite in geostationary orbit, and so back down again to their earthly destinations. In half a second (give or take a nanosec or two).

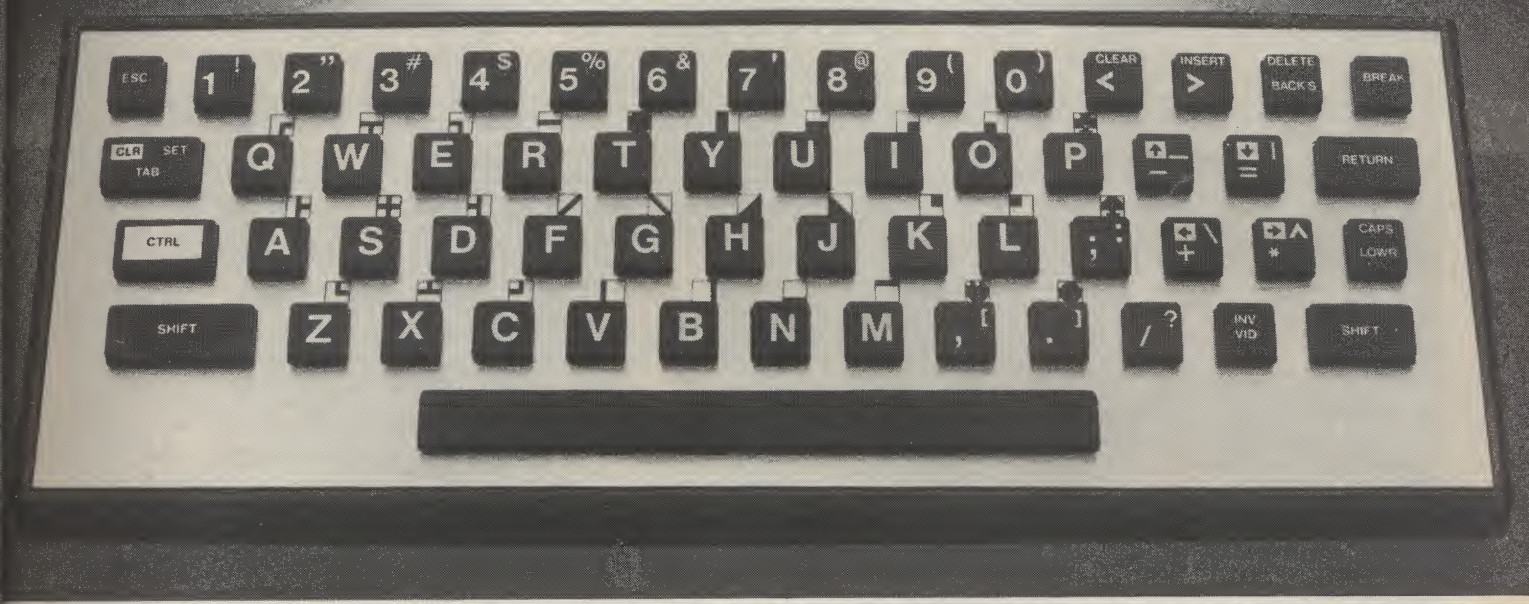
Slipping into conjecture — what rich pickings are there in all this for the well-seasoned hacker to lick his chops over?

Surely it is only right and fitting that alien dudes, whenever they should appear, ought to debut via the good offices of some diligent midnight intersat hacker! Hacker Sat! Hackellite? Hacknik?

Back to the real world: private business has stormed ahead of nationalised database networks. Meanwhile, B.T. carries on implementing its mysterious 'System X' — changing over exchanges from analogue to digital. Today, your call to the States has a 50% chance of going by satellite.

What next? You can buy your own dish right now from about £5,000 upwards (installed). Or you can buy a chunk of Satstream direct for a mere £50k per annum and rent bits to your pals. Failing that, you'll just have to wait for Andy Green's upcoming monster epic, 'Build a Receiving Dish from Cornflake Boxes'.

A VITAL PIECE OF SOFTWARE FOR ATARI 400 OWNERS.



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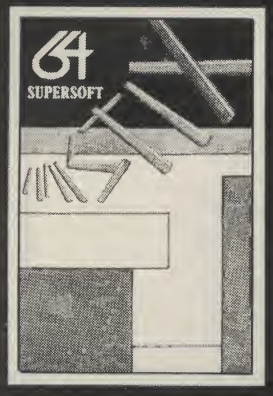

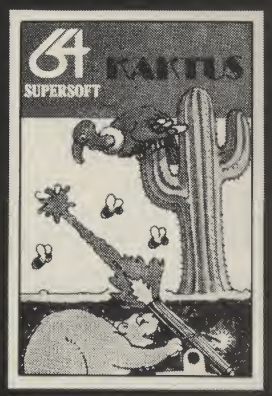

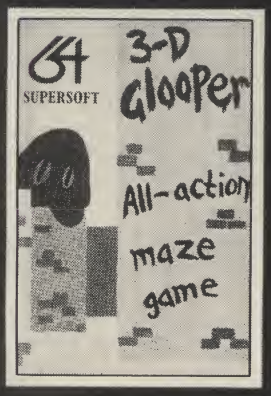

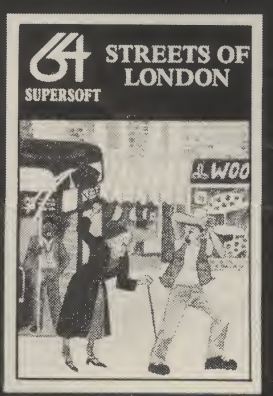

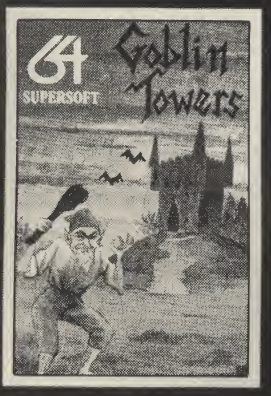

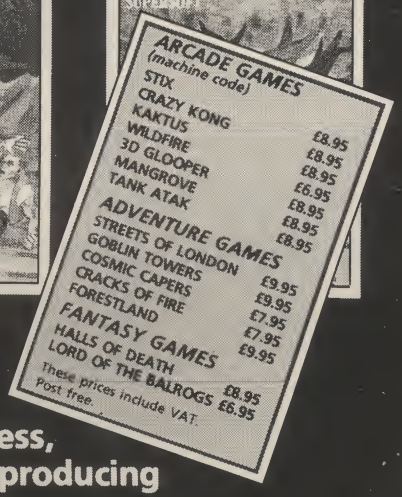

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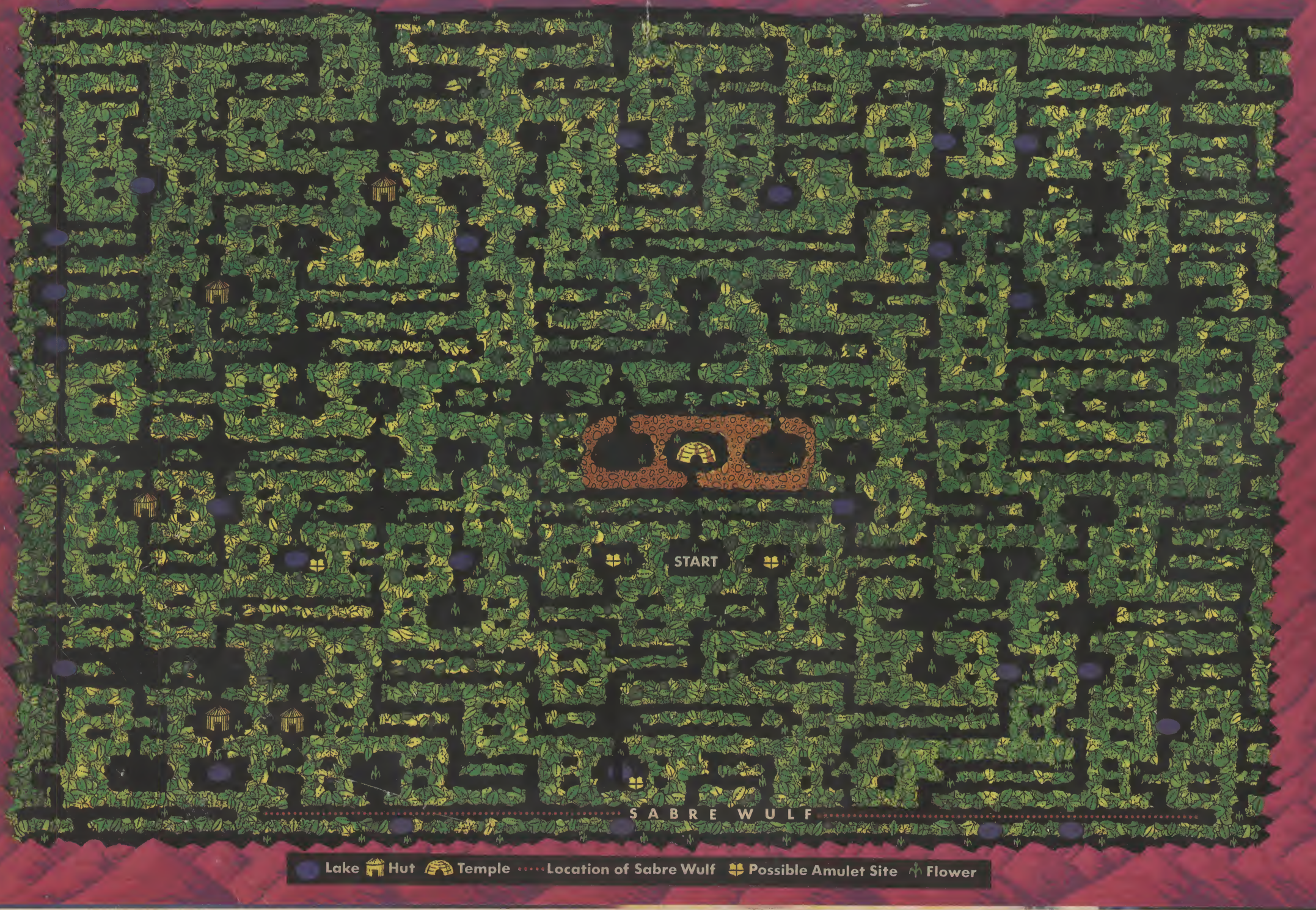
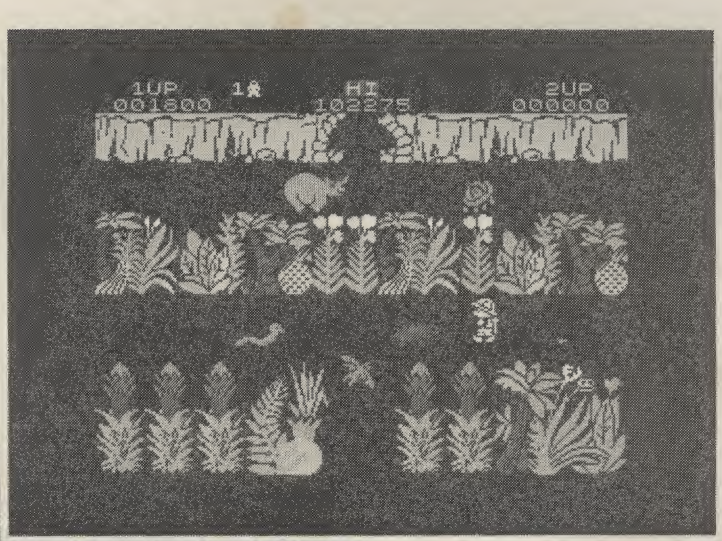

START
SABRE WULF
Lake
Hut
Temple
Location of Sabre Wulf
Possible Amulet Site
Flower

WATCH YOUR STEP

it's a real jungle out there!

Ultimate Play-the-Game's newest and lushest hit to date is *Sabre Wulf*, a mean, fast, brilliantly coloured jungle frenzy with all the puzzles and super-smooth coding now expected from its authors. Or is it nothing more than an over-priced retread of *Atic Atac*? RICHARD BURTON plays the game . . .

"In the jungle, the mighty jungle,
the lion sleeps tonight . . ."
So sang Tight Fit in 1982 (and so did Karl Denver, for those of us with longer memories). In a strange way the song seems more than appropriate to Ultimate's newest offering, *Sabre Wulf*, because the lion is about the only beast that does sleep — every other creature in this jungle is nauseatingly active and out to make life hell for you!



With just six games Ultimate have carved themselves out a heavy rep with the games punters to the extent that each new release is as eagerly anticipated as the next Michael Jackson Album. So far they have only once gone back to a previous game theme for a new release. *Lunar Jetman* was a souped-up version of *Jet-Pac*. With *Sabre Wulf* they have returned, justifiably, to many of the arcade-adventure elements that made *Atic Atac* such a chart success.

The word 'enigmatic' almost sums up the game. It comes in a plain black box with simple title stickers front and back. Inside a six-page fold-out leaflet contains cryptic comments in purple prose that are little or no help. Basically, you're on your own in discovering exactly what this game holds.

The scenario, as said, is a vast jungle maze, glossily rendered in colourful hi-res graphics. (See map opposite for crib.)

You have control of a tiny, sword-wielding (?) explorer in search of four parts of an amulet. Obstacles are constantly appearing in his path in the form of snakes, bugs, lizards, wart hogs, gorillas, hippos, rhinos, etc. There's a list of 14 of the critters in the instructions. A quick thrust with the sword will finish off most of these or, in the case of the larger beasts, at least scare them off. Also the local plant life can aid or endanger any of your three lives.

Many items appear in your path which can be picked up simply by crossing them. Unfortunately, *Sabre Wulf* doesn't feature *Atic Atac's* on-screen display of what you're carrying. Again, it's up to you to find out what these items are and how they can benefit you.

Sabre Wulf is a safari of discovery, a Big Game hunt where you are the prey. It's the nearest yet that Ultimate have come to an adventure game (note the *Hobbit*-style 'percentage complete' indicator) and is sure to fuel the letters pages of the computer press for some time.

It's another high quality Ultimate product and value for money (just about), even at £9.95, a figure that Ultimate claim reflects "higher development and packaging costs".

Luckily it's not the sort of game that will lose its appeal quickly.

HOW WE GOT OUR SABRE WULF MAP

Sabre Wulf had been out a couple of weeks when BIG K's office phone range. "Would you like to see a complete map of *Sabre Wulf*?" asked a voice. We gulped an amazed "Sure" and the caller rang off. No more than two minutes later the phone rang again. "Interested in a map of *Sabre Wulf*?" said another voice. An even more surprised affirmative from our end and, a few days later, two brilliant maps were in our hands. They were both so good that we decided to combine them into one — the one you see here. So take a bow *Alex Crabtree of Newcastle* and *John Cheal of Reigate — Sabre Wulf* Champions both.

Got any tips about *Sabre Wulf*? Found out any sneaky tricks to beat the jungle? Send them to Letterbase. We'll use the best and bin the rest!

WHACKO

FRENZY/BBC

Breakout goes whacko. You remember *Breakout*? No? Am I getting that old? *Breakout* is the game where you have to trap a bouncing ball in a box by moving a line around a screen. *Frenzy* is a variation of that.

The story goes thus — deadly sub-atomic particles (Leptars) are loose in a scientific laboratory and you have to trap them before the time runs out. Your tool in this mammoth task is a robot craft behind which is a green ion trail. This you use to draw ion lines which, hopefully, will ensnare the little devils. Trouble is, if you get hit by a Leptar while you're on the draw, so to speak, you get clobbered. After a few screens things get nasty, you get more Leptars to deal with plus Chasers (they chase you).

This is a very simple game, easy to play but difficult to master, as they say. But, unlike many simple games it's very addictive. The kind of thing you spend all night thinking 'just one more game before bed' and then realise the sun is creeping over the top of the screen. — K.A.

Maker: MICRO POWER
Format: cassette
Price: £7.95
Graphics: KK
Playability: KK
Addictiveness: KKK
Overall: KK

CUBEPAINTER

BLOCKBUSTER/BBC

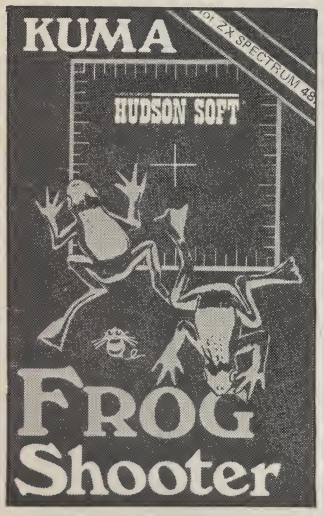
So here we go again. *Q-Bert* does a quick change act. Master of disguise, he assaults us from the games shelves as any number of characters.

In this particular variety he wears his rabbit cozzy and calls himself Harvey. (All due respects to Jimmy Stewart.)

Micro Power, masters of the multicolour moving screen, never fail to live up to their rep. as quality games writers and this one is particularly nice. Young Harvey, so they tell us, is on a quest for the Elixir of Life (as supplied by your friendly neighbourhood Leprechaun). Of course something as valuable as The Elixir requires a little more than money and Harvey is given a task to complete. Paint a pyramid? Well, nearly right. In fact it's the Giant's Causeway and Harvey approaches the task with considerable style. The bouncing ball is there, natch, but the snake has gone and we're left with a fox who leaves grubby footprints all over the nice shiny paintwork. The only way to get rid of him is to lure him over the edge of the causeway.

This is a good game. If you like *Q-Bert* then you'll like *Blockbuster* which is well up to Micro Power's usual standards. — **K.A.**

Maker: MICRO POWER
Format: cassette
Price: £7.95
Graphics: KK
Playability: KK
Addictiveness: KK
Overall: KK



CROAKER

FROG SHOOTER/SPECTRUM 48K

Fairly duff arcade shoot-out. You (looking more like a moth into military chic than any kind of frog — but let it pass) are stuck in an alley drawn with the most primitive and confusing kind of 3D technique. Along this low-res byway come bouncing various Kermits and giant eyeballs and so forth. Naturally, you must shoot them.

It's an uninspiring task, even though the red ball projectiles that pop from your antennae when you press the fire button are one of the few neat things about this game. Another neat thing is the bouncing effect contrived for the objects in your path. The blue "mystery cannonballs" that come bowling along with quite monotonous regularity are almost too neat, and invariably blow my uniformed moth to smithereens.

Without a joystick, controls are the clumsy IJLM (or WADX keys that I always find particularly frustrating. But even were the manoeuvring easier, this would still be nothing more than a lifeless, boring game. — D.R

Maker: KUMA/HUDSON SOFT
Format: cassette
Price: £6.95
Graphics: K
Playability: K
Addictiveness: None
Overall: K

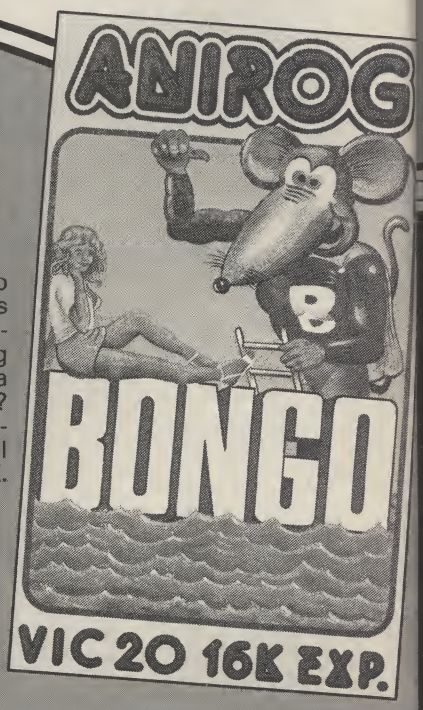
BINGO!

BONGO/VIC 20 + 16K, CBM 64

Probably one of the best ladders 'n' levels games available for the expanded Vic. Set in a riverbank cave it chronicles the attempts of Bongo the mouse to outwit the dank denizens of the clay caverns and win the heart of a lonely princess (splutter). You of course take the role of the lovelorn rodent and with the aid of a well oiled 'stick must guide him past nine sheets of adversaries. To move twixt these sheets you must collect a fistful of flashing diamonds, and that entails some pretty hairy manoeuvring I can tell you.

The sprite graphics are bright and suitably cute and hardened gamesters will appreciate the wide variety of strategems available. I kinda suspect that the key to lasting success is through the secret transporters hidden about the screen. These portals are unavailable to the mouse-hunting monsters on your tail and so become invaluable escape routes. Bonus points can also be racked up quickly by gobbling up the BONGO letters which float around the screen during the early stages. All in all it's a hectic piece of work. I have yet to survive the gamut of screens and win the head of the princess, but I'll continue to plug away. I mean, shucks, a mouse and a princess? Bizarre notions keep me flailing away in the hope that all will soon be revealed. — **S.K.**

Maker: ANIROG
Format: cassette
Price: £7.95 each
Graphics: KK
Playability: KKK
Addictiveness: KKK
Overall: KKK



SEA HUNT

SEA QUEST/DRAGON

Maddening. I mean, an apparently uncomplicated and straightforward adventure with a limited vocabulary and graphics that, although unspectacular, are at least quick, clear and pleasingly functional. It is quite frankly an utter doddle to work your way through the first 20% of this thing.

Then what? Quite clearly there's some large treasure heard somewhere (though, actually, you're never told as much). Equally clearly, you're expected to explore underwater at some point. Try it, however, and you end up in a wooden box (though not, disappointingly, in Davy Jones' Locker).

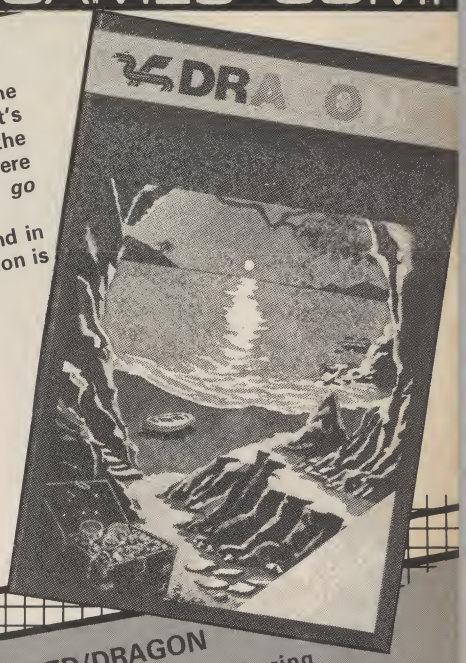
So where's the aqualung, then?

I've looked everywhere. Examined everything. Tried every conceivable combination of object and command in every location I can find. Not one single flicker of further possibility. All of which I'd put down to experience or my own lack of imagination were it not for one thing. It's either a howler of a bug or an extremely shoddy piece of writing but it's driving me mad.

At the initial location, there are two 'obvious directions' but the game will only let you go in one of them. As this is one of two directions along the beach (from which all the rest of the adventure seems to flow) it's reasonable to assume that the things you need are down there somewhere. *But you can't go that way!*

Apart from running round in circles, the only other option is to drown yourself. — **D.R.**

Maker: DRAGON DATA
Format: cassette
Price: £10.95
Graphics: K
Playability: K
Addictiveness: K
Overall: K½



REBEL WITHOUT APPLAUSE

JOHNNY RED/DRAGON

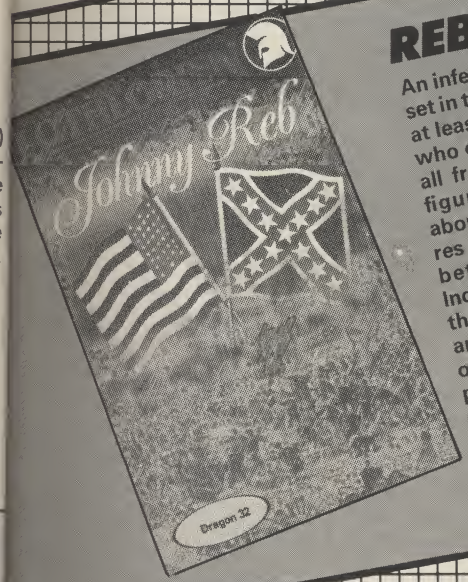
An infernally dull strategy game set in the American Civil War. Or at least, so it says here. Anyone who can imagine any setting at all from the pathetic, squiggly figures that flicker their way about the most uninspiring lores battlefield I've ever seen is a better strategist than I am. Indeed, it's hard enough telling the difference between infantry and cavalry, your men and the others (player two's or the computer's) without a severe case of eyestrain and a thumping headache, let alone conjuring up any sense of there being Yankees and Confederates, Mason-Dixon Lines and all that stuff.

In fact the basic division between cavalry (move furthest, last longest), infantry (don't move so far or last so long) and artillery) (shoot things) could come from any European or American battle from a span of about two centuries. Both the rules of engagement (basically attrition — each unit has strength points, which are knocked off alternatively until one wins) and the visual representation of it (opposing squiggly graphics flashing in turn) are tedious and unimaginative.

The thing is also fearfully slow. The computer seems more concerned with boring you into submission than blasting your infantry. Everything takes hours. Even the final totting up of the score — performed before your very eyes — is carried out at a speed that would disgrace an innumerate five-year-old.

Very low-res. Very Basic. Very bad game to spend hard-earned money on. — **D.R.**

Maker: LOTHLORIEN
Format: cassette
Price: £6.95
Graphics: None
Playability: None
Addictiveness: None
Overall: None



NIX-HIC-PIXIES

SHENANIGANS/DRAGON

A reasonably amusing little adventure that would seem eventually to lead to the end of a rainbow and, of course, the pot of gold concealed thereabouts by cautious leprechauns. So the blurb would have it, anyway.

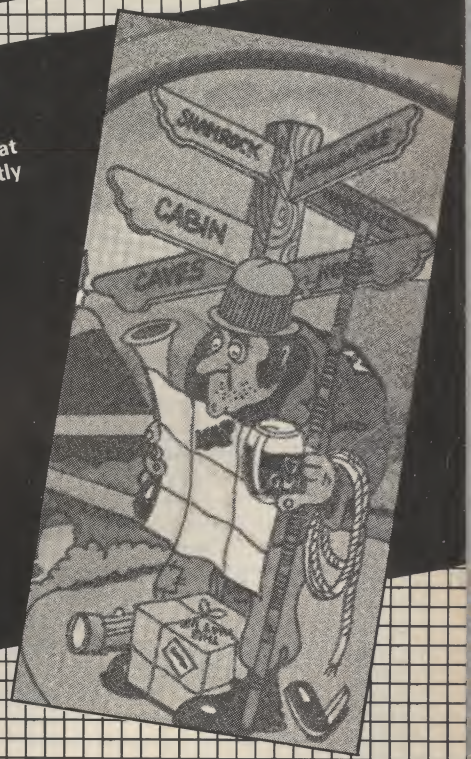
Odd, then, that it begins in a city people with stroppy landlords, vicious muggers and cops ever vigilant for cases of indecent exposure. (Be warned: once in jail, there is not only no way out, but also no way of QUITting the game. If you haven't SAVEd, you'll simply have to LOAD up again).

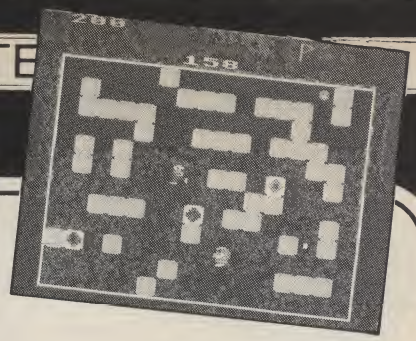
Of Little People there is, however, no sign. Unless O'Malley the Irish barman is a leprechaun, that is. It seems unlikely.

Presumably all hinges on getting into the subway and whatever lies beyond. That feat has frankly proved beyond the resources of this hardy adventurer, although in the process of trying I've drunk so many beers at the O'Malley pub that I'm surprised I can still move from one location to another in a straight line.

All good fun actually. Give me pubs and muggers over dungeons and goblins any day. A limited vocabulary and fairly dull graphics don't spoil what turns out to be a pleasantly thorny game — **D.R.**

Maker: DRAGON DATA
Format: cassette
Price: £7.95
Graphics: K
Playability: KK
Addictiveness: KK
Overall: KK





BLOCK WAR

RENEGADE ROBOTS/BBC

The only good robot is a dead robot and make the most of it because you can be sure as hell that the Commission for Robot Equality is only a spit into the future. Which brings us to *Renegade Robots*. This is a bit like a giant sliding block puzzle, added aggro coming by way of the now familiar group of vicious robots.

OK. The planet is under dire threat of invasion, but fear not, scientists have everything under control. Or they did have until a series of explosions wrecked the production of the secret weapon they were working on. Amongst other things the explosions caused the robots manning the production line to go berserk. The only way to save the line is by aligning three key control cubes or destroying the renegade robots. Moving blocks means getting behind them, gritting your teeth and shoving like hell, whereupon the block careers across the screen, junking anything in a straight line between here and eternity. You know the *Pongo* lick.

Once the robots are sorted out some idiot scientist makes the same mistake and you have to start all over again. A robo-hunter's job is never done.—**K.A.**

Maker: SENATOR SOFTWARE
Format: cassette
Price: £6.95 approx.
Graphics: KK
Playability: KK
Addictiveness: KK
Overall: KK

SELLAFIELD SUNSET

ATTACK ON WINDSCALE/CBM X64

Somebody wants Windscale, although what they're going to do with it heaven only knows. Maybe they've got a beach they don't like people swimming in.

So what is *Attack on Windscale*, adventure or arcade? It's both. On two cassettes already. Part one is standard Space Invaders fare with a pretty background, but part two could be a Purple People Eater for all I know.

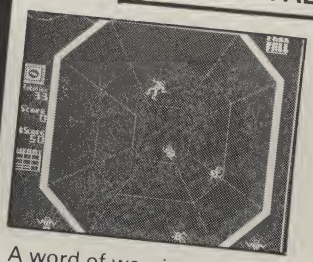
There's this problem, see. You don't get into the adventure without a password and the password is hidden somewhere in the bowels of screen four of the action game. We put our best men on it (some were never seen again) but no one got past the second screen. Result: no password/no adventure. All we know is that you have to find a quartz crystal which you use to stop the reactor from going critical. You then have to find the nasties who started all the trouble and give them a seeing to.

If you're suddenly seized with an uncontrollable desire for an adventure with *Space Invaders* for dessert then you might save yourself with this offering. — **K.A.**

Maker: PHOENIX SOFTWARE
Format: cassette
Price: £6.99
Graphics: K
Playability: K
Addictiveness: KK
Overall: KK

BILIOUS PARROT

FREEFALL/BBC



A word of warning from one of my more informed sources — floating around in zero gravity makes you sick as — nay, sicker than — a parrot. Better to adopt a more sensible attitude and go for it in the Acornsoft way.

Freefall is as close as the likes of you and I are going to get to zero gravity, commercial space travel still waiting for its Branson-figure. The action takes place on board the deep space station *Coriolis* which has been attacked by Alphoids. These boys are all fun. They've injected the air supply with cyanide and only one crew member has reached his space suit in time.

It's not only Alphoids that the crewman has to contend with. The place is full of 'oids; Waspoids, Craboids, Lobstoids — all do their bit towards making life very hairy.

The game simulates freefall conditions very nicely. You can move around either by using the suit's air jet or by pushing or kicking against walls. The beasties are disposed of by kicking, punching or catching and throwing one of the bombs that float around the station. It's not easy, though. If you don't have a joystick think seriously about having a few extra hands grafted on.—**K.A.**

Maker: ACORNSOFT
Format: cassette
Price: £9.95
Graphics: KKK
Playability: KK
Addictiveness: KK
Overall: KK

TAKE THREE

3D LUNATTACK/DRAGON 32

The great Seiddab war rages on, this time across the pock-marked surface of the moon. In your bristling new Hover fighter you must breach the three defences of the ghastly alien Seiddab base and destroy their Command Bunker. The first defence zone is patrolled by some fairly mindless robotic tanks and so is (relatively) easy to pass — once you've mastered the complexities of prolonged Hover flight! Zone two is rather more difficult as you must fly across mountainous terrain through great clusters of aerial Seiddab mines. I invariably met my demise here, thundering into the mines with all the flying skill of a shortsighted pigeon. I never managed to see the range of self activating missile silos beyond, nor the alien base itself.

The onscreen display is comprehensive and includes cockpit cross hairs for pin pointing the enemy, automatic radar, fuel monitor and temperature display. This is particularly useful as direct hits and exploding mines cause the hull to overheat, which means pushy pilots will soon roast. Scrolling throughout the game is smooth and the bleak hi-res graphics are delightfully effective. I particularly liked the distant Earth which appears on the horizon as you rocket aimlessly around the luna surface. All in all this is a classy climax to Hewson's Seiddab trilogy and so is well worth checking out. It's certainly as good as those highly-rated 32 offerings from the Tom Mix stable.—**S.K.**

Maker: HEWSON CONSULTANTS
Format: cassette
Price: £7.95
Graphics: KKK
Playability: KK
Addictiveness: KKK
Overall: KKK

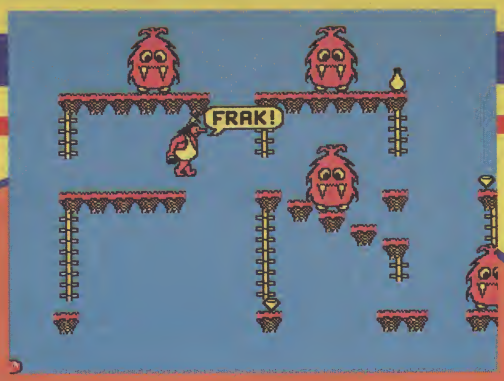
TAIL END CHARLIE

Star Raiders circa World War II. Despite the army fatigues this is pretty standard shoot-'em-up fare, in which enemy fighter planes whirl and tease your straining gunsight. You've four difficulty levels and thirty missions to complete, which vary between high-level bombing sorties and low-level rocket attacks (phew!). It must be said that considerable effort has been made to turn this into an authentic flight simulation/arcade hybrid. Rather cleverly height and movement all have relative effects upon the action and the flight deck details any damage done to the ship.

You also receive messages from the pilot during the mission — nothing inspires confidence like being rubbished over the airways! But despite this fine realisation I found the game a little lacklustre. All the careful embellishments tend to slow down the onscreen action.

I also disliked having to negotiate the Softlock security code every time I donned my flying goggles. Like *Jet Set Willy* the game comes with an numerical grid which must be consulted prior to entering your Lancaster. At least this version isn't colour coded and so doesn't alienate those colour blind/black 'n' white TV owners. Small mercies eh?—**S.K.**

Prog: NIGHT GUNNER
Maker: DIGITAL INTEGRATION
Machine: SPECTRUM 48K
Format: cassette
Price: £7.95
Graphics: KK
Playability: KK
Addictiveness: K
Overall: KK



THIS YO-YO NO NO-NO

I sit here with a new game in my hand. A small, rather unimpressive gold package, with what looks like a kangaroo on the front. On the back is inscribed the immortal legend, "probably the finest graphics ever programmed into a game on the BBC". Oh yeah? And how many times have we heard that before? Hang about . . . HANG ABOUT. These really *are* the finest graphics ever seen in a BBC game! Traditional block characters make a hasty departure via the window, enter stage right a new generation of cartoon type characters, with an almost filmic quality about them. The secret is Mode 1 hi-res graphics — more detail than the usual Mode 2 rubbish.

Mind you the author's a nutter. Trogs with yo-yos signals white coats time for me.

The trog is the central character. He runs up and down ladders and jumps onto platforms, Donkey Kong-style, avoiding balls and daggers thrown by an unseen hand.

It's really something to see. The trog is Disney-like in character. He scuttles around the screen with his hands clasped behind his back to disguise his secret weapon — a . . er . . . yo-yo? — which he uses to great effect against his attackers.

This could set a new standard in BBC graphics. If you see it, buy it. — **K.A.**

Prog: FRAK
Maker: AARDVARK
Machine: BBC
Format: cassette
Price: £6.95 (approx.)
Graphics: KKK
Playability: KKK
Addictiveness: KKK
Overall: KKK

3-TIME LOSER

Three games for the price of one. This is too good to be true — or is it? How, one asks, do these people manage to supply three games for the price of one? Easy, they fish around in other people's dustbins.

All three games are for two players (one of them can be the computer). First there's *West World*, a Wild West shoot-out. Each player controls a cowboy who walks like a dog. Next is *Space Race*. Rather like a primitive *Rocket Raid*, the idea is to race the opposing spaceship through a tunnel and into a docking slot. There has been a great deal of speculation over the shape of the spaceship of the future but an ace of diamonds must be pretty low on the list.

Finally we are given *Kamikaze*. 'A suicidal onslaught'. The name of the company wreaking this havoc is Terminal Software. — **K.A.**

Prog: TRIPLE TOURNAMENT
Maker: TERMINAL
Machine: COMMODORE 64
Format: cassette
Price: £7.95
Graphics: nix
Playability: uh-huh
Addictiveness: pass
Overall: Deep 6

TWANG!

Not exactly hip but certainly hot! After a couple of notable duffers (*Eskimo Eddie*, *Pogo*) Ocean return to form with *Cavelon* — a quite superb maze game.

Christian Urquart, author of the best selling *Kong* and *Hunchback* for the Spectrum has excelled himself here with this infuriating but compulsive medieval quest.

As a portly knight you must gird your loins and waddle bravely through the portals of the dread castle Blah in order to rescue the incarcerated princess Guinevere. There are six levels to traverse all of which boast considerable peril. (She had better be worth it.) To move between the floors you need to collect the portions of door which have been scattered about the maze. These portions are guarded by a host of trigger-happy archers who'll do their level best to deflate your ardour. Only the mystical aura of the legendary Excalibur can protect you and even then only in bursts.

Upon completing each level a little graphic routine depicts your triumph. Although there's a comprehensive joystick option I opted for the more definite feel of the keyboard. Well, if you're gonna spend days on a game you might as well get comfortable, eh—**S.K.**

Prog: CAVELON
Maker: OCEAN
Machine: SPECTRUM 48K, COMMODORE 64
Format: cassette
Price: £5.90
Graphics: KKK
Playability: KKK
Addictiveness: KK
Overall: KKK

KOSMIC KANGA

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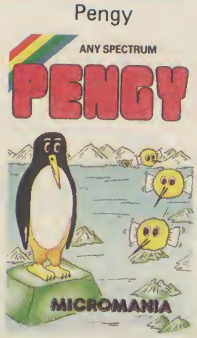
Tutankhamun

48K Spectrum

Pengy



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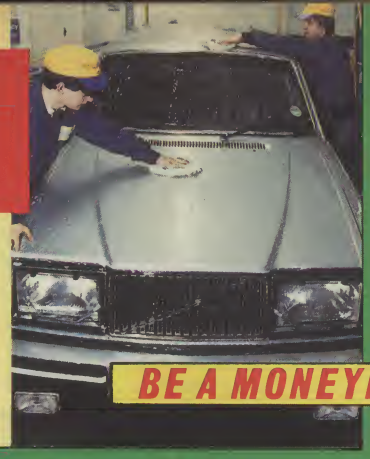

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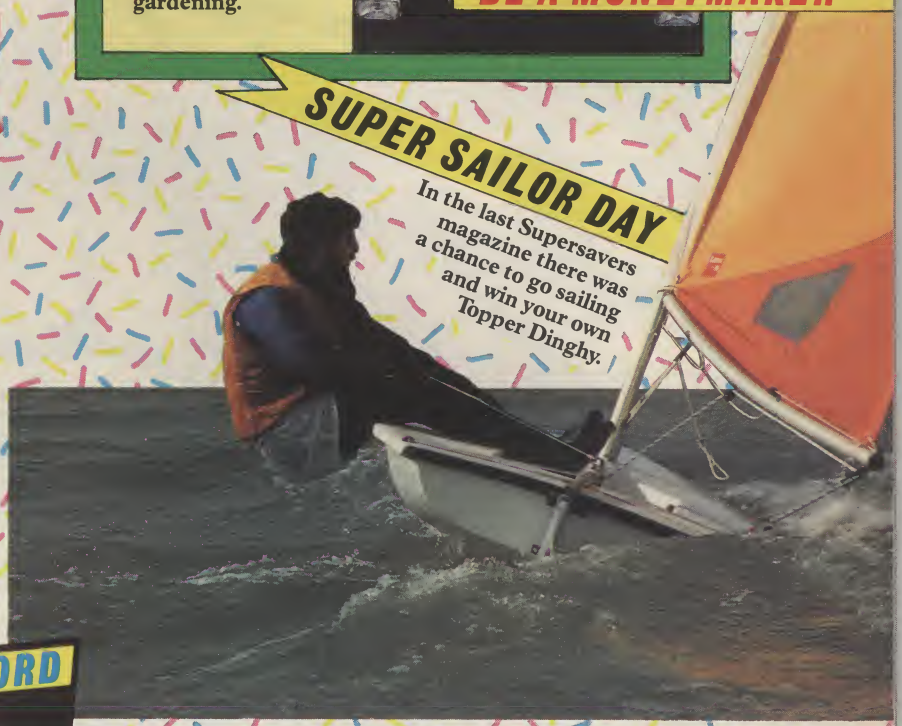

MAKE A RECORD

Lynn Hoole, winner of our songwriting competition, not only had her song recorded in a top London studio. She also flew to New York to see her record being pressed.

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THE GLORY OF THE RAJ

RAJ SINGH got the break millions only dream of — a part in *Indiana Jones and the Temple of Doom*, mega-adventure and long-awaited sequel to Steven Spielberg's *Raiders of the Lost Ark*. In the movie, he plays the sinister Little Maharaja of Pankot.

Indiana Jones (Harrison Ford) is entertained in the Palace of Pankot by said little Maharaja (Raj Singh) — bejewelled, primped and lacquered in his fabulous costume. Raj holds court with impeccable hospitality and charm. That's until Indy stumbles across him at work one evening, participating in the revival of an ancient and evil sect, in which the Goddess Kali demands human sacrifice . . .

The satin-clad Satanist is now back at school (in Ealing!) and the only beastly thing about him is his Dragon 32, bought with movie earnings.

He prefers adventure games, and drinks Coke, not blood.

"Steven Spielberg, Le Huy Quan (Short Round) and I played the arcade machines at Elstree studios together during the breaks in filming. Steven liked *Pole Position* and *Dig Dug*. He was very, very good. He fixed the machines so that we didn't have to pay to play.

"Being an actor is not my real ambition. I'm really interested in computing and want to work on the business side. Acting would be my major hobby.

"Making the film was lots of fun and a real experience. The set for the actual Temple of Doom was so vast and extravagant I could hardly believe it. I was nervous at first when it came to my part, but Steven was so nice that I soon forgot about that."

THE GREEDY DWARF/ Goldstar/BBC 'B'

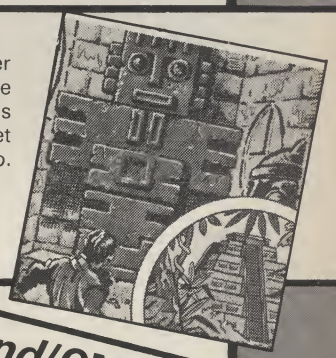
In this text-only adventure, King Arganda — the Indomitable — has had his crown jewels nicked by a dwarf — the Greedy and Loathsome. The adventurer who risks all to recover the missing rocks will be rewarded with fame and glory.

"The Greedy Dwarf is the most intellectually satisfying of all the games I played. The text reads as well as a good novel — and that makes a change. This is really important because you very quickly begin to build up a picture of the king's castle in your mind's eye. All the same, for myself, it's a case of 'what good is a book without pictures?' I enjoy graphical adventures most of all."

QUETZALCOATL/ *Virgin*/ 48k SPECTRUM

QUETZALCOATL *is a real Indiana Jones-style adventure. Raj looked a bit peeved with the prospect of another maze game, but once he got started rapidly became involved. Instead of the usual bird's eye view, our guest found himself inside the scrolling 3D tunnels of the maze. As in the Temple of Doom, directional dyslexics stand to lose not only their way but their lives!*

"Did I like *Raiders of the Lost Ark*? You bet! My sister and I saw it about seven times! Getting chosen for the sequel was a dream come true, and I certainly like this adventure. The display is classy and exciting and you get right into the adventure first. The text's entertaining too. Especially when you try to pronounce 'Huitzilopotchli'."



THE PRIZE/ Arcade/ 48k SPECTRUM

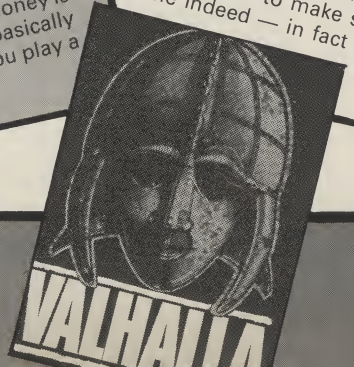
THE PRIZE is your actual maze game. The quest here involves putting the three types of Guardian under heavy manners and collecting the vital 'code pods' in the correct order in order to progress through the levels. Getting to the central maze chamber might give you even more than a gloat — Arcade are offering £5,000 cash money for a snapshot of the final screen. Could this be the final winkling of the walnut of life? Raj didn't think so.

"I think it's a real cheat. For starters it's too much like Berserk, and the graphics are poor and gaudy to the point of naff. It may have a few more screens, but it's basically a shoot 'em up, not what I'd call an adventure. The money is just a gimmick to entice you into playing what is basically an uninventive game. Even money won't make you play a dull game. I think it's boring."

VALHALLA/ Legend/ CMB 64

VALHALLA has been variously described by resident square-eyed adventure hacks as "state of the art", "the best adventure game in existence" and "a real pain". Raj tuned into the epic and watched the 36 independent characters come and go, eat, drink and die. Valhalla plays on alone — like a movie.

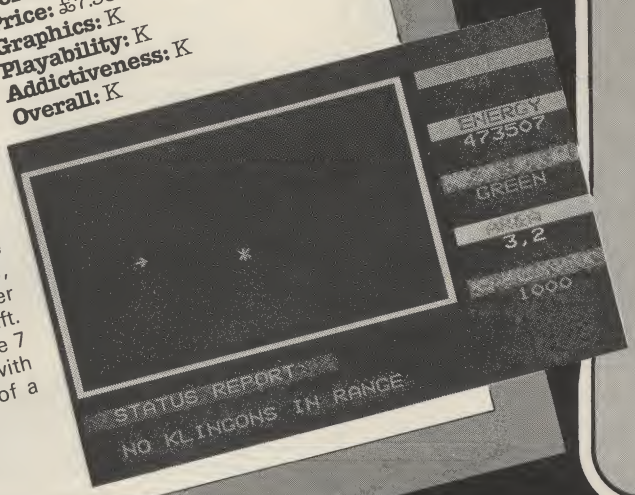
"You'd obviously need a really long time to even start to play this game properly. The graphics have a lot of character and the locations have atmosphere. But there are just so many characters to learn about. You'd have to become an expert in their individual natures in order to progress. It doesn't help that you have no time to think before you move, as the game will go on its own way without you, and you have to make snap decisions. It's a very clever game indeed — in fact I think it's a bit too clever, and I don't really like it."



BOLDLY TRIED
TREK/BBC

Well, folks, the cat's out of the bag. The highbrows at *Acorn User* magazine DO play games with their Beebs. They've written *Trek* and sneaked it out the back door when they thought nobody was looking. Mind you, they don't make it easy, it's a complicated game — three onboard computers, two weapons systems, seven screen displays . . . and it takes some time to get used to. The object of the exercise is to patrol the universe, doing a pest control number on a fleet of alien spacecraft. The trouble is it's in Mode 7 and I had a bit of trouble with the stunning realism of a starship represented by a small and rather lonely arrow. In fact after all the guff in the build-up it's a bit of a disappointment. — **K..A.**

Maker: ACORN USER/MICROGRAF
Format: cassette
Price: £7.95
Graphics: K
Playability: K
Addictiveness: K
Overall: K



SHEEPISH
IT'S THE WOOLUF!/SPECTRUM

"It's the Wooluf," you may recall, was the title of a truly abyssmal cartoon show that escaped from the Hanna-Barbera stable sometime during the late sixties/early seventies. Gruesomely animated and horrendously unfunny, it was one of the worst post "Scooby Doo" (original season) HB offerings ever and consequently marked the end of an area for the once highly-rated fun merchants.

I tell you this simply for lack of anything else to say about this flat offering from The Home of The Things.

As far as I can see it's a straight reworking of Virgin's early clunker, *Sheepwalk*. The graphics are neater but the gameplay is strikingly similiar. In it you must instruct

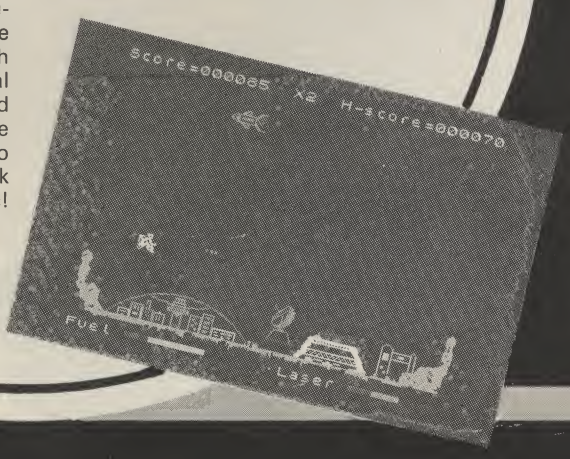
BETTER BUT . . .
SPACE COMMAND/SPECTRUM 48K

Space Command is the best offering yet from the elderly (cough) team of Poole and Murray, authors of *Yomp* and *Rider,* also from Virgin. Here the quasi-militaristic tone of their earlier work has been replaced with good ol' SF. You play Defender (no relation) to a domed Kandor-style asteroid which is busy ploughing through the galactic spacelanes. As you might imagine this reckless behaviour is guaranteed to arouse the ire of local lifeforms and they do their best to flatten the flying city.

It's all very similar to Imagic's old *Atlantis* ROM. The graphics are nice, although nowhere near as sensational as the promo blurb would have you believe, and the gameplay is tough. I've yet to clear the first wave, who look like renegades from Jet Pac! Limited laser fire and shallow fuel tanks add to your problems.

I guess if you're still in the market for a space shoot 'em up then this is worth a look, although after an hour or so I wasn't so much addicted as cheesed off. Hope the next one's a little more original boys. — **S.K.**

Maker: VIRGIN GAMES
Format: cassette
Price: £5.95
Graphics: KKK
Playability: KK
Addictiveness: K
Overall: KK



FRIGID
PENGI/BBC

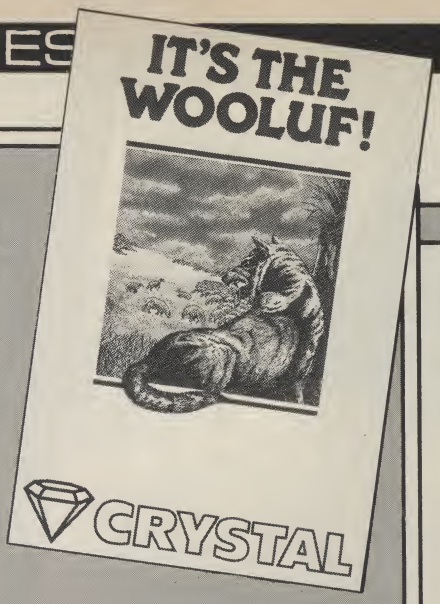
Pengi is a penguin (yeah?). He's locked in the freezer and you've got to get him out.

In short, another one of those games where you have to shift blocks of ice about in order to get three specially marked blocks in a line. Just to make things harder a flock of Snow Bees, with fatal stings, buzz between the blocks looking for penguins to sting. They can be crushed with the ice blocks or, if you can lure them to the electric fence (in a freezer?) they can be stunned and then stomped on.

Old Pengi is none too bright, though. Once he's aligned the blocks and escaped from the freezer he gets locked up in another one and has to start all over again.

It's all good clean fun but the credibility rating runs a bit low. The day I find a penguine and an electric fence in my freezer is the day I volunteer for the rubber room. — **K.A.**

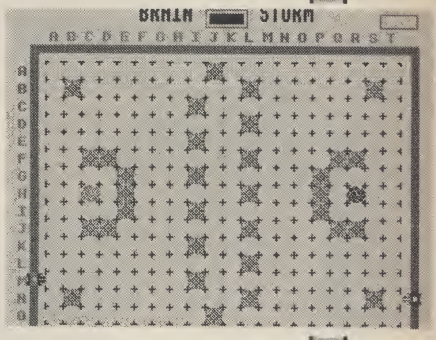
Maker: VISIONS
Format: cassette
Price: £6.95
Graphics: K
Playability: KK
Addictiveness: K
Overall: K



your trusty collie to herd a flock of sheep across a bridge, through a wood and into the relative safety of the sheep pen. Meanwhile the hungry 'wooluf' patrols the forest in the hope of gobbling up some stray dinners. Clear the sheet and you're blessed with another flock of even more suicidal sheep. Woolly stuff indeed. — **S.K.**

Maker: CRYSTAL COMPUTING
Format: cassette
Price: £5.95
Graphics: K
Playability: K
Addictiveness: K
Overall: K

HEADACHE
BRAINSTORM/BBC



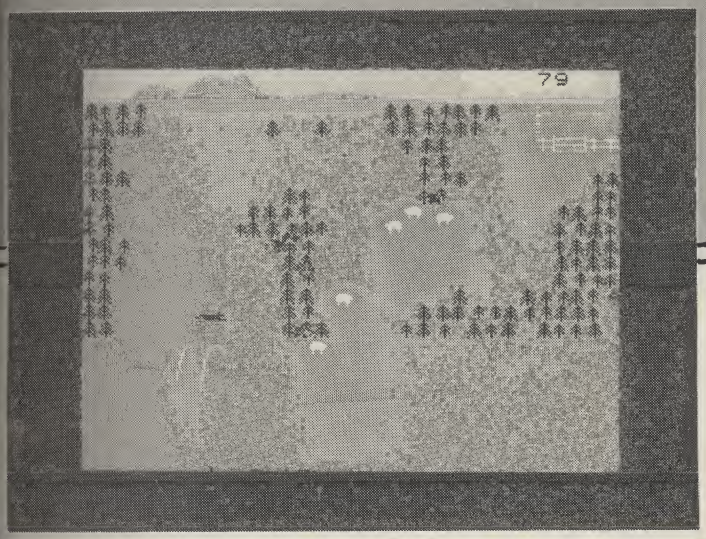
This month Virgin Games bring us a new concept.

Totally Misleading Instructions.

After a week or so things improved. An envelope containing a letter from Virgin and a small diagram arrived. It seemed the game was virtually unplayable without the diagram. But the really good bit was that the diagram made a total mockery of the instructions in the program itself.

Looking to the game it's a board-type game of "skill, memory, logic and nerve for two players". The idea is for each player to defend his brain (the one on the screen) against the lasers of his opponent by the strategic placing of deflecting prisms. The game comes to an end when one or other of the player's brains is toasted. What more can you say? — **K.A.**

Maker: VIRGIN GAMES
Format: cassette
Price: £6.95
Graphics: K
Playability: K
Addictiveness: K
Overall: K



AVAST BEHIND!
SEA ADVENTURE/BBC

Sea Adventure is just what it says, an adventure at sea — with graphics. Let's talk about graphic adventures. Most fail on the BBC, mainly because of memory limitations. Virgin, with *Sea Adventure,* uphold a grand old tradition in this respect. In fact it's a major step backwards. I mean, BASIC? Not only that, the only way to enter text is by the function keys (this means it knows a grand total of 10 words — impressive, huh?) The graphics in Mode 7 are feeble. The occasional animation displays a profound flair for the non-event. — **K.A.**

Maker: VIRGIN GAMES
Format: cassette
Price: £6.95
Graphics: None
Playability: None
Addictiveness: Do what?
Overall: None

BIG BIRD
BLACK HAWK/CBM 64

Popular rumour has it that this game was inspired by the Falklands conflict but I would be prepared to bet that Robert Duval strafing the beaches to the delicate strains of 'Ride of the Valkyries' in *Apocalypse Now* had more than a passing say in the matter.

Black Hawk is a highly sophisticated attack aircraft; fast and deadly. Your mission is to seek out and destroy enemy airfields and launch sites on a small group of islands. Your aircraft is fitted with an advanced computer system which automatically switches between two attack modes — bomb-'em-to-hell or shoot-'em-out-of-the-skies.

If your 'on target percentage figure' (how much destruction you cause) is high enough advanced weaponry is automatically fitted, giving greater kill power. All this is accompanied by Wagner's 'Ride of the Valkyries'. Music while you work?

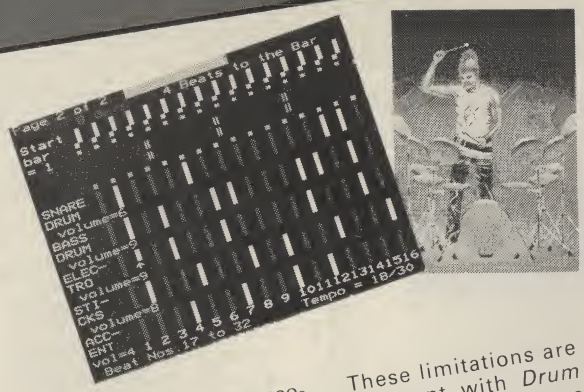
In 'attack' mode you use the joystick to control sights, dropping bombs on the unfortunates below. If you miss any of the mobile targets (tanks, missiles, etc) the computer automatically reverts to 'defence' mode, giving you a second chance.

Fast action and lots of variety. — **K.A.**

Maker: CREATIVE SPARKS
Format: cassette
Price: £7.95
Graphics: KK
Playability: KK
Addictiveness: KK
Overall: KK

WHACKATTACK

DRUM KIT/BBC



Some time ago Quicksilva thrust *Music Processor* upon an unsuspecting world, the end result of which was weeks of sleepless nights for parents/wives/dogs.

The success of *Music Processor* has inspired the Game Lords to produce *Drum Kit*, which no doubt will produce exciting responses in any deathwatch beetles that happen to be in the immediate vicinity.

Down the side of the screen are the various drums; snare, base, etc., each of which is designated a row of buttons. The idea is that each button represents a bar beat and you use the cursor and return keys to turn the buttons on and off. If a button is on the associated instrument plays a beat, if not it doesn't. Very simple, very straightforward. You can also use the envelope editor to redefine the sounds and store up to 4,000 beats on tape.

Just as *Music Processor* was, *Drum Kit* is easy to use and quite effective. I had some reservations about *Music Processor* but these were mainly limitations imposed by the machine (the Beeb's sound chip is good but hardly recording standard). These limitations are less apparent with *Drum Kit*. While its use as a serious instrument are somewhat dubious, as a practice instrument it could definitely prove its worth.—**K.A.**

Maker: QUICKSILVA
Format: cassette
Price: £9.95
Graphics: K
Usefulness: KK
Addictiveness: KK
Overall: KK

SLOW PORKER

PAINTPIC/CBM 64

For about a week *Paintpic* was known as Paint*pig* around this household until somebody quite rightly pointed out that pigs don't feature all that strongly and what looked like a 'G' was more likely to be a 'C'.

My first attempt, intended to be a subtle rendition of Guernica, came out looking like the ceiling had fallen on it. Practice was definitely the order of the day. After a bit the commands became more familiar and it became easier.

There seem to be a few contradictions here. Computer aided design (CAD) by its nature should be as fast as possible otherwise it's just a damned nuisance. *Paintpic* is too slow to be realistic. There's no doubt you can do a lot with it — it has routines for drawing, painting, circles and arcs to mention bu a few — but drawing anything is like waiting around for a bus.

The help screens are totally incomprehensible.

It works, but it's expensive and unless you enjoy spending weeks on a drawing think about something else.

—**K.A.**

Maker: KUMA
Format: cassette
Price: £19.95
Graphics: KK
Usefulness: K
Addictiveness: K
Overall: K

LIBRARIAN

ACOS+/CBM 64

ACOS+ doesn't exactly speed up cassette loading but it certainly makes life easier. It enhances the cassette filing system (ACOS stands for Advanced Cassette Operating System), making it operate in a similar fashion to a disc — although it still retains the snail-like qualities of '64 loading.

Part of the reason for discs being so fast is that they keep a catalogue of files on the first sector so that they can move quickly to the requested file. *ACOS+* does much the same thing. It looks at its catalogue and then lets you fast-wind the tape to the position of the file you've asked for. Of course you still have to press the fast forward button but because the computer has control of the cassette motor it can stop when it reaches the right program.

In addition to this you get a whole load of new commands.

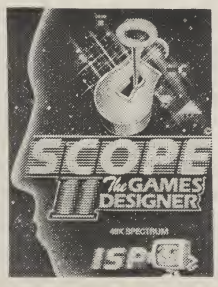
Then we come to the BASIC extensions. They operate like normal keywords and give some very nice control over sound and sprite graphics.

All in all a nice package. The only point against it is that no program will work unless *ACOS+* is installed, so forget about any ideas of using it to make a killing on the games market.—**K.A.**

Maker: MELBOURNE HOUSE
Format: cassette
Price: £8.95
Graphics: N/A
Usefulness: KK
Addictiveness: N/A
Overall: KK

VAST SCOPE

SCOPE II/SPECTRUM 48K



Don't be fooled by the "Games Designer" tag plastered across the packaging of *Scope 2*, this beautifully structured utility is quite unlike menu driven customisers such as Melbourne House's *Hurg* and Software Studio's *Games Designer*. It's a far more useful medium-level language dedicated purely towards the manipulation of high-speed graphics, sound and animation. And the beauty of the system is that code generated by *Scope 2* will run independently of its mother tongue.

The perfect tool for frustrated games writers! What's more it's exceptionally accessible! You've a mere 36 command words to master which, once written into Basic REM statements, can be instantly compiled into machine code using a simple USR call. Of course experienced m/code hackers will bemoan the system's limitations but others will find it a genuine boon.

Scope 2 itself appears remarkably clean. The only bug I came across was its total refusal to recognise the NOTE command, *Scope's* equivalent to the REM statement. But that's a small price to pay. The package is completed by a useful sprite designer routine and some simple *Scope 2* listings. With this and Gilsoft's *The Quill* the Spectrum games market has been blown apart. Owners of the original *Scope* should upgrade immediately. Great stuff!—**S.K.**

Maker: ISP
Format: cassette
Price: £17.95
Graphics: N/A
Usefulness: KKK
Addictiveness: KKK
Overall: KKK

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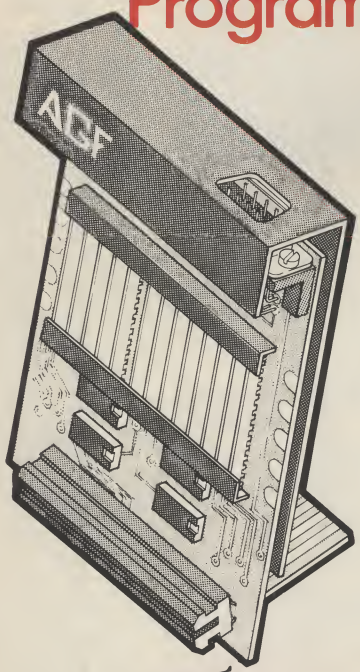
Programmable Interface



The AGF Programmable Joystick Interface has established itself over the past year as being the only hardware programmed device that accepts ALL standard joysticks or trackballs – including Quickshot II with 'rapid-fire' – for use with ALL Spectrum or ZX81 software.

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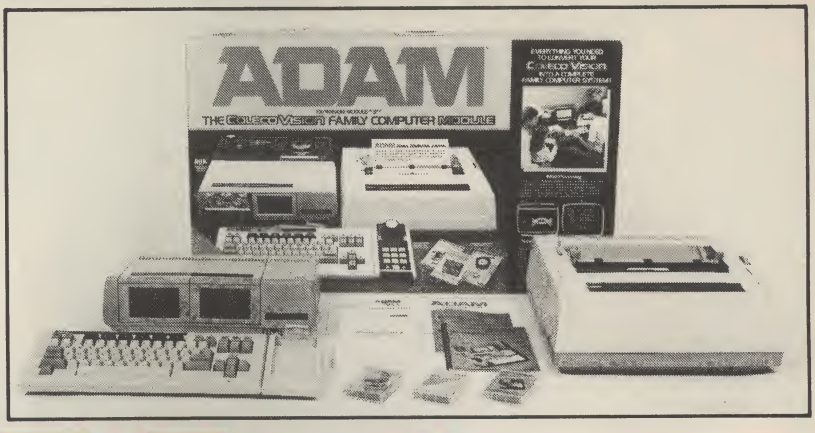

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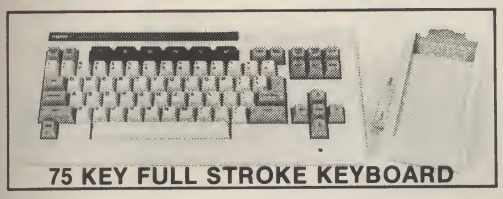
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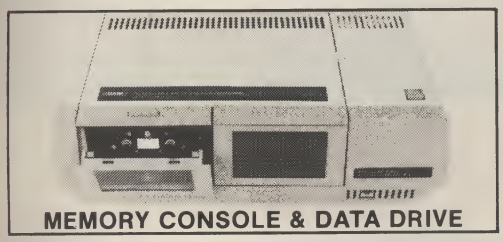
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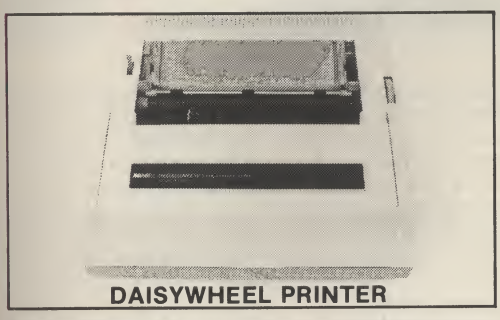
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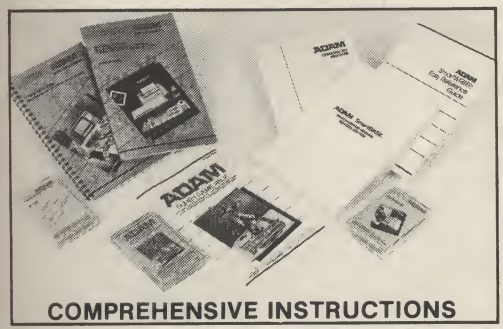
COMPREHENSIVE INSTRUCTIONS

COLECOVISION GAMES CONSOLE

QUITE SIMPLY - VALUE FOR MONEY!

If you're looking for real value in a computer system, one which can handle anything from serious Word Processing to enhanced Colecovision style video games such as Buck Rogers, look no further. The Coleco Adam is here with a package which will make you wonder if you're dreaming when we tell you about it. A price breakthrough in computer systems, Adam is comprised of an 80K RAM memory console with a built-in 256K digital data drive; a professional quality, stepped and sculptured 75 key full-stroke keyboard; a letter quality daisywheel printer and a full word processing program built into the Console. Two additional pieces of software, Smart BASIC and also 'Buck Rogers - Planet of Zoom' (the ultimate in advanced video games), are included as well as a blank digital data pack. Adam can be used with any domestic colour Television set.*

MEMORY CONSOLE/DATA DRIVE: *The heart of the Adam system is the 40K ROM and 64K RAM memory console which combines with the 32K ROM and 16K RAM in Colecovision to give you a total of 72K ROM (including 24K cartridge ROM) and 80K RAM (expandable to 144K). Built into the memory console is a digital data drive which accepts Adam's digital data packs, a fast and reliable mass storage medium that is capable of storing 256K of information, that's about 250 pages of double spaced text! The console is also designed to accomodate a second optional digital data drive.

FULL STROKE KEYBOARD: The Adam keyboard has been designed as a professional quality keyboard that combines ease of use with an impressive array of features. It is stepped and sculptured for maximum efficiency and has 75 full stroke keys which include 6 colour coded Smart Keys which are redefined for each new application; 10 command keys which are dedicated to the word processing function, and 5 cursor control keys for easy positioning of the cursor at any point on the screen. You can attach a Colecovision controller to the keyboard to function as a numeric keypad for easy data entry. It can also be held like a calculator, a feature which makes working with numbers particularly easy. The joystick part of the hand controller can be used in the same way as the cursor control keys, to move the cursor around the screen.

LETTER QUALITY PRINTER: The Smart Writer letter quality daisywheel printer is a bi-directional 80 column printer which prints at a rate of 120 words per minute. It uses standard interchangeable daisywheels, so a variety of typestyles are available. The printer has a 9.5 inch wide carriage for either single sheets or continuous fan fold paper and uses standard carbon ribbons. It is comparable to many printers which cost as much as the total Adam package. The printer can be used either with the Adam's Smart Writer word processing program or as a stand alone electronic typewriter.

BUILT-IN WORD PROCESSOR: Adam comes with Smart Writer word processing built-in. This program is so easy to use that you only have to turn the power on and the word processor is on line and ready to go. Detailed instruction books are not necessary as the Computer guides you step by step, working from a series of Menu commands. It enables you to type in text, then completely edit or revise it with the touch of a few keys. Changes are readily made and a series of queries from the computer confirm your intentions, so that you can continuously double check your work as you type.

COMPATIBILITY WITH COLECOVISION: By using high speed interactive microprocessors in each of the modules, the Coleco Adam is designed to take additional advantage of both the 32K ROM and 16K RAM memory capability in the Colecovision. If you do not already own a Colecovision Console (£99 inc VAT), then you will need to purchase this when you initially purchase your Adam Computer package (£499 inc VAT), making a total purchase price of (£598 inc VAT).

WHAT IS COLECOVISION: Colecovision is one of the worlds most powerful video game systems, capable of displaying arcade quality colour graphics of incredible quality on a standard Colour TV set. The console (see picture bottom left) accepts 24K ROM cartridges such as Turbo and Zaxxon and is supplied with the popular Donkey Kong cartridge and a pair of joystick controllers. Colecovision has a range of licenced arcade hits available such as: Gorf, Carnival, Cosmic Avenger, Mouse Trap, Ladybug, Venture, Smurf, Pepper II, Space Panic, Looping, Space Fury, Mr Do, Time Pilot, Wizard of Wor and many others. So there you have it, Adam plus Colecovision the unbeatable combination. Send the coupon below for your FREE copy of our 12 page Colour brochure giving details on the complete Adam system.

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STICKS MAY BREAK...

... Or do their bearings in, but nothing fazes JOHN CONQUEST. He's got plenty more to fall back on

LOOK THROUGH the computer mag ads and you'll see that there are a lot of people trying to sell you custom joysticks, all convinced that theirs is the real McCoy. "Arcade action", "instant response", "high quality", "professional" — writing joysticks ads looks like a doddle, but what we're concerned with here is the rather more difficult business of actually buying one.

Obviously the first consideration is compatibility, whether or not the widget will fit your machine. Virtually all the joysticks currently available are designed to fit Atari video & computer systems and Commodores, though they'll also work on CBS's Colecovision videos (you'll still need a standard controller in the second port to make the games run). Wico supply adaptor leads for Apple and Radio Shack marchines and, like Suncom, for Texas Instruments TI 99/4As. A rare exception is Suncom's *Stike Commander* (£16.95), made specifically for the BBC or Dragon, though Kempston are also planning a BBC stick.

VEXED

The vexed question of interfaces is one on which you'll need expert, and hopefully disinterested, advice. For Spectrums, the *Kempston* at £11.50, which will accept any stick, has only one drawback, a single port. For BBc's the *Wizard* at £14.95 is recommended. The basic rules are not to get joysticks with plugs jury-rigged to fit machines they weren't designed for (they don't work too well) and to avoid anything that needs a program to make it run.

A less obvious but vital consideration is the size of your hand. Believe me, that's important. Many of the sticks I tried simply weren't comfortable, but might well suit someone with smaller, or indeed larger, hands and this applies especially to shaped grips.

Unfortunately a lot of shops stock a very limited range, usually Quickshot IIs or Point Masters, so for this and many other reasons it's well worth while going to one of the big computer shops and trying your hand at their range. Lion House in London's Tottenham Court Road, for instance, has 17 models ready to be hooked up for demonstration, and the Silica shop in Sidcup reckons to have at least 15 of a possible 26 in stock at any given time. Even if you just try them for feel, you'll notice the differences.

Ask yourself realistically how much you're going to use a stick. Price differences are almost entirely down to quality of construction and the cheap ones simply aren't up to a lot of punishment. If you're heavily into 'Decathalon', to take an extreme example, a cheap joystick is going to be a waste of money. With joysticks you get what you pay for with a vengeance, and Atari owners at least should calculate whether they're really improving on the standard issue sticks.

OBVIOUS

The most obvious differences between cheap and not so cheap sticks are whether or not they have steel shafts, the grade of plastics (high impact or extruded) used and the general solidity of construction. What you don't see is the guts, which is what really sorts them out. Very few sticks have microswitches (though Kempston are rumoured to be using them in all future models), but the leaf switches found in most vary considerably in quality and the cheap ones have very limited lives. Also

hidden inside the casing is the shaft mounting which is another thing that decides whether or not the stick will go on doing what you want it to do.

You should also think about the kind of game you usually play. Sticks come in two basic configurations, with the fire button in the handle, either centre fire on the top or trigger fire in the handle itself, or mounted on the base. I'm convinced that handle fire is a major contribution to fire control. Most of the sticks with handle fire have a base button as well, which can be a nuisance when hand holding, and some base mountings are available in either left or right hand versions or already have both, either as separate buttons or as a bar across the width of the base.

Most of the sticks mentioned were tested with Activision's Atari computer version of *River Raid*. It requires precise manoeuvre, reliable and responsive speed control and pinpoint fire — in other words it uses everything that a joystick ought to offer.

The cheapest sticks around are *Acorn* at £13 a pair (soon to go up to £19), which are so terrible that nobody seems to stock them. The *Pinnacle* at £7.95 is admired more for its price than for the quality of its 8-way movement and handle and base fire buttons, but if you really want to spend the minimum, this is the one.

LEFT: Suncom Slik Stik. RIGHT: the Joy-Sensor vicious oversteer.

For £9.95 you can get Spectravision's *Quickshot I* with centre handle fire and sucker feet, which, for rather more, is a standard Spectrum interface offering. Like its big brother (below) its shaped handle makes hand size critical. Easy to use, though because of the shaft mounting rather loose, it's as fragile as it looks and would last about five minutes in an arcade. Its leaf switches have a poor reputation. Alternatively there's Suncom's *Slik Stik,* the cheapest half way reasonable stick, which has a ball grip, a left hand side base fire button and is a nice hand size. Solidly made, it's the kind of thing Atari ought to be offering as standard.

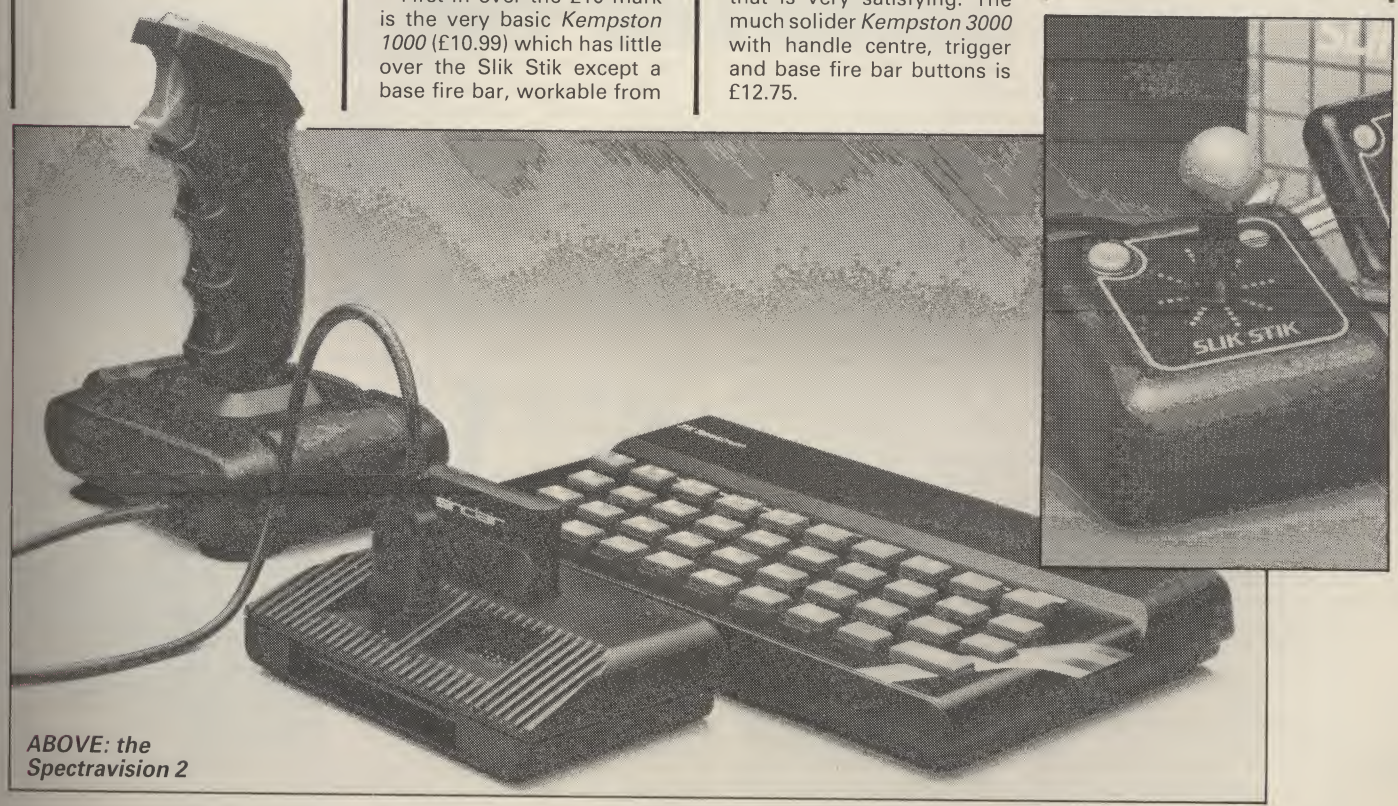
First in over the £10 mark is the very basic *Kempston 1000* (£10.99) which has little over the Slik Stik except a base fire bar, workable from left or right. The handle suggests that it might best be controlled with the thumb. It's followed at £11.95 by the *Quickshot II* which is identical to the junior version already dealt with except that it has 'auto rapid fire' via a trigger in the handle, its main selling point.

LOOSE FEEL

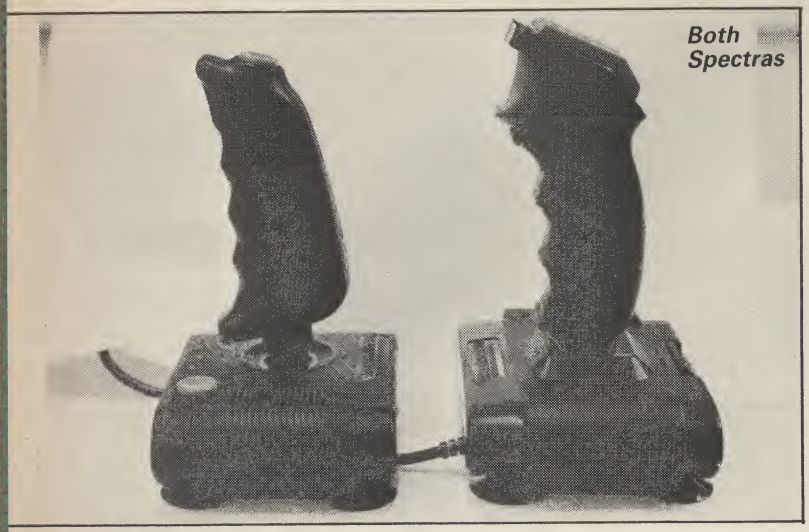
The *Triga Command II* (£12.99) has a very similar loose feel, again due to the shaft mounting, and looks very plasticky. It has a trigger fire only (and suctions cup feet) and comes in £19.99 versions for Spectrum and BBC. The handle design however is excellent with a diamond cross-cut pistol grip that is very satisfying. The much solider *Kempston 3000* with handle centre, trigger and base fire bar buttons is £12.75.

At £12.95 you can choose between the *Point Master,* very similar to the Quickshot II but slightly less robust, and Sumlock's all-British *Pro-Ace* which resembles the Kempstons in its solid high-impact plastic construction and fire bar (plus centre fire in the handle), but which I found sluggish and awkwardly shaped. On the other hand, Sumlock back up the quality of their leaf switches with a two year warranty, so it should be pretty reliable in the long term.

The top of the range *Kempston 5000* (£13.50) is, again, a very solid piece of work with a ball grip on a short, tapered steel shaft and both left and right hand base



ABOVE: the Spectravision 2



Both Spectras

fire buttons. It feels a bit stiff but I'm told that it wears in well. The next Suncom, the £13.95 *Starfighter* (also available in a ritzier version for Apple computers at a very ritzy £39.95) is a very nice hand size with excellent manoeuvre and speed control. It has a left hand base fire button and a stubby unshaped plastic handle that I found far too short, but that's me.

Wico, like Suncom and American firm, make their first entry at £14.95 with *The Boss,* a muscular brute that I found very heavy to use, aggravating my advanced case of video wrist, but very positive. However as the hand grip is shaped for a much smaller hand than mine, it's virtually unusable in my glove size.

The Arcade at £15.95 is the cheapest stick that one can get really enthusiastic about. Dutch made, with very superior microswitches, it's extremely positive and responsive, a real pleasure to use. This is an excellent device and highly recommended — not just by me but by Lion House where it's a big favourite.

STEEL SHAFT

Back to Suncom at £18.95 with the *TAC II* which has a ball handle, steel shaft, non-slip feet and left and right hand side base fire buttons. A nice size for hand holding but, despite the amazing manoeuvre control, I find the shaft too short, the fire buttons need very firm instruction and the game (River Raid) seemed much speedier than with other sticks.

The legendary *Le Stick* at £19.95 boasts unique mercury switches, but they're a mixed blessing. While it's ideal for one-handed use and suits games like *Decathalon* superbly, firing jogs the switches so that it has a tendency to jump about when you start shooting. Le Stick is if anything too responsive and so hard to control, making it a real wrist killer.

THE PROFESSIONAL

QUALITY

Jumping to £24.95 we have another Wico, the *Red BAll,* a quality number with a longer steel shaft, a good size ball handle with built in fire button, plus another on the base, and all the control one expects from Wico widgets. However at this price I'd spring another £3 to get the £27.95 Wico *Three Way*. This is my personal favourite of all the sticks I tried and, for my money, the top of the range. It has a very long steel shaft, which means a far better 'throw', and three different clip-on handles, though in practice I only use one, the slim tapered job. The Three Way has a centre fire button in the handle and another on the base, but it offers a unique switching feature which enables one to cut off the base button, extremely useful if, like me, you like holding the stick in one hand and working it with the other. With other dual fire sticks it's very easy to find your fingers working both fire buttons, which may not be what you want. For *River Raid* at any rate the Three Way is the primo stick for control, fire accuracy, delicacy of manoeuvre, speed control and overall feel and response.

TOUGH BABY

From the same stable as The Arcade comes the *Professional Mark II* at £28.95, which looks rather like it had been ripped off the front of an arcade machine. This is one tough baby and though I can't help wondering exactly what 'Professional' means in this context, if anything deserves the name this does. I imagine some of you must at stome time have put your noses into a video arcade. If so, you'll know exactly what to expect from this one.

The joker in the joystick pack is Suncom's *Joy Sensor* which looks rather like an upmarket version of Intellivision's control pad. I can't make it work and though I've heard rumours of people who have mastered it and love it, I've never actually met one of them. All it gives me is vicious oversteer. At £29.95 this seems like a real gamble, but maybe I'm missing something.

MOVE BLIP

All joysticks do pretty much the same thing, move a little blip round a TV screen. So how come there's a £20+ difference between the cheapest and the most expensive? Well, it depends on whether they're being made to a price or to a standard. I am not a racist . . . but. The tell-tale on the cheap sticks is the 'Made in Taiwan, Hong Kong, South Korea' and there's no getting away from the fact that they're not in the same class as the American and Dutch made sticks.

The trick is to find one that suits both your hand and your pocket, which is why you need access to a wide range. However even the big shops have no consensus view; Lion House are big Wico fans, plugging the price range with the Pinnacle and The Arcade, while Silica Shop prefer the Suncom Slik Stik and Starfighter with the Quickshots as back up. To me the ideal stick would be a cross between the Triga (handle design), The Arcade (micro switches) and Wico Three Way (everything else). In the real world three sticks seem to me to stand out as value for money and they are:

1. **Suncom Slik Stik — £9.95.**
2. **The Arcade — £15.95.**
3. **Wico Three Way — £27.95.**

THE LOT

SEE THE MOVIE — THEN PLAY THE GAME

MOVIES are increasingly finding their way into the world of the micro — and vice versa. Some have taken the arcades by storm, like *Tron* and *Star Wars*. Others run direct to micro — like Palace's *The Evil Dead* and (well, OK) *ET*. In the latter, Atari relied on the mega-popularity of the movie to sell a rushed-out, naff game. It bombed spectacularly. *ET* stands as a case history. Corporate disaster due to the underestimation of games lovers.

***Raiders of the Lost Ark* was translated (also unsuccessfully) into the Atari game of the same name. It also inspired a whole 'genre' of games, like Activision's *Pitfall* and Quicksilva's *Fred*.**

YOU REMEMBER CELLULOID — DON'T YOU?

SEVERAL times in the last three years Major Motion Pictures have generated Major Video Games — *Raiders, E.T., Star Wars*, the James Bond movies . . . not all of which have been unqualified successes. NICKY XIKLUNA armed herself with popcorn and notebook and checked out the autumn crop. Her aim? To spot next year's mega-licence deals before they happen.

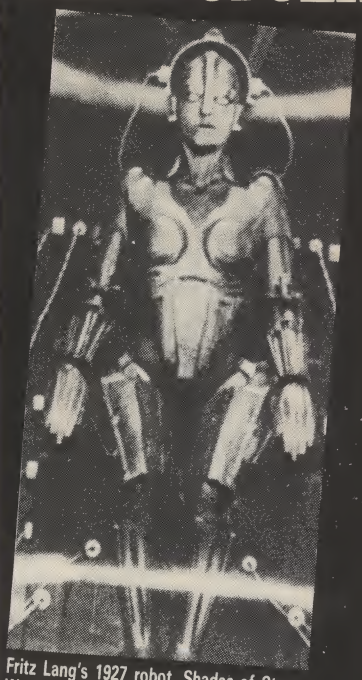
★★★★★★★★★★★★★★★★★★★★★★★★

SUPERGIRL

THE 'Super' family are back to save the World again. This time it's* Supergirl. *Supergirl's not as grand a movie as its predecessors, perhaps because the action's confined to the small Mid-Western town of Midvale. But the cast is really strong, including Peter Cook, Mia Farrow, Simon Ward, Peter O'Toole and Faye Dunaway as Supergirl's opponent — Selena.

The power-crazed Selena utters the cry of "Today Midvale — tommorrow the World!" and the battle is ON. Dontcha try it Selena. We know who's going to win. But what fun it is getting there!

METROPOLIS



Fritz Lang's 1927 robot. Shades of Star Wars?

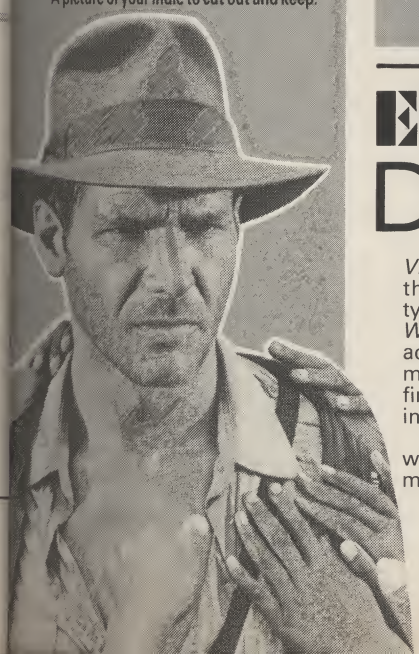
IF YOU though that the epic fantasy film was new, here's one that's celebrating its 57th birthday, and still going strong. *Metropolis* is a touchstone lurking behind nearly every scrap of phantasmagoria produced since it was made (in 1927!) Fritz Lang's original monumental vision has had its echoes in *Blade Runner, Lord of the Rings*, and Roger Dean-style artwork. And for my money — it hasn't dated so easily.

Georgio Moroder thinks so too. He bought the film rights. He's coloured it and set it boogfie-ing along to modern music, like Pat Benetar and Adam Ant. A real stunner.

INDIANA JONES and the TEMPLE OF DOOM™

IT will not have escaped you that *Raiders of the Lost Ark* now has a sequel — *Indiana Jones and the Temple of Doom*. Be prepared for the reverberations that these latest perils of El Archaelologist will surely spread to the games world. Speilberg productions have conspired to ensure that you never get beyond the very edge of your seat. Don't see it if you want to relax. Heroic stuff. I like it better than *Raiders*. Will it make a game? Someone sure as hell will try . . .

A picture of your Indie to cut out and keep.



GREMLINS

GREMLINS are being kept mysterioso by Spielberg Productions. So no pictures! (The Shad. says that they're a cousin of ET — with teeth). Havoc is wreaked on yet another Mid-Western town, after 'Gismo' — the first and benign Gremlin — is fed hamburgers after midnight.

There's already a Thor game out by the same title — but it's nothing to do with the celluloid version. That one's coming out soon from Atari — who hold the rights to this nice little number.

ELECTRIC DREAMS

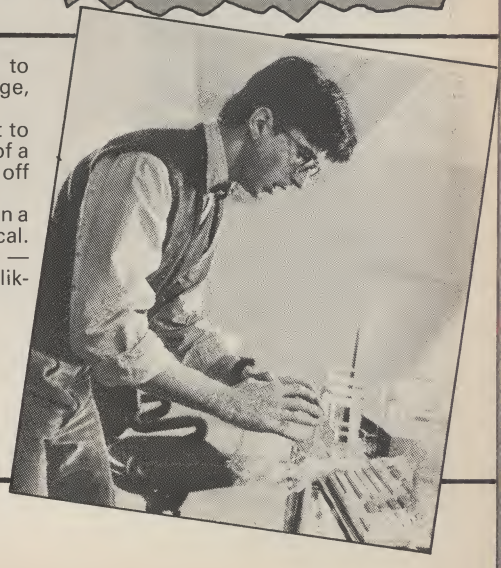
VIRGIN'S Electric Dreams shows that computers haven't been typecast after their film debut in *Wargames*. This microcomputer acquires a few extra million K's of memory and learns to talk. He finally pops all his pixels by falling in LERV.

I don't think that *Electric Dreams* will take shape as a game, but you might be interested in the spectacular computer graphics set to original music by Boy George, Heaven 17 and more.

A special interface was built to base the effects on the ability of a simple micro. Then they took off and got really complicated.

The result is half way between a hi-tech pop-promo and a musical. It's an entertaining night out — especially if you've an innate liking for schmaltz.

Hero Miles will try anything to put his computer in its place — even champagne!



LASER DEFENSE

For ORIC By GRAEME MORRIS

It's raining missiles and the city is about to get more than just wet! You are in a bunker controlling the retaliation. Using the cursor buttons seed the sky with your cross-hairs. Press SPACE to fire the laser bolts that can stop the incoming warheads. If the city is hit more than seven times the radiation build-up will cause an explosion.

You have 12 laser bolts per wave. Your score and hits on the city are totalled up at the end of each wave. If you survive an attack with no hits you can get a bonus of 5000 points. Each wave is faster than the last. If you make it beyond eight waves we'd like to hear about it!

```
10 REM ******************************
12 REM **                            **
14 REM **        LASER DEFENSE       **
16 REM **                            **
18 REM **              FOR           **
20 REM **                            **
22 REM **           BIG 'K'          **
24 REM **                            **
26 REM ******************************
28 :
45 PRINTCHR$(17),CHR$(20)
50 HIMEM£8700
55 GOSUB2000
60 GOSUB1000
65 CLS:EXPLODE
70 PAPER0:INK6
75 HIRES:POKE618,10:CURSET0,158,0:FILL18
,1,2
80 HTS=0:ATC=0:SC=0:BX=0
85 CLS: PRINT" HITS ON CITY: ";HTS;"
   SCORE: ";SC
90 CURSET10,168,0:FORZ=1TO37:CHAR111,0,1
:CURMOV6,0,0:NEXTZ
95 A$="srrsp srprsrp spsssrrsrs pspsrpss
pspr"
98 CURSET10,160,0:GOSUB1500
99 ATC=ATC+1:V=ATC:0=INT(100/(V+2))
100 CURSET65,182,0:FORZ=1TO12:CALL£FAFA
105 CHAR116,0,1:CURMOV10,0,0:NEXTZ
110 N=0:LS=12:X=120:Y=60:BX=0:H=0
115 FORZ=1TO10:J(Z)=0:NEXTZ
117 FORZ=1TO8
120 QX(Z)=INT(RND(1)*220)+10
125 QY(Z)=INT(RND(1)*180)+35
130 QZ(Z)=INT((QY(Z)-QX(Z))/9)
135 NEXTZ
140 CURSETX,Y,3:CHAR43,0,1:PING
145 R=0:S=0
150 FORZ=1TO8:CURSET(QX(Z)),0,3:DRAWQZ(Z
),20,1
155 NEXTZ
160 FORV=1TOQ:GOSUB170:NEXTV
165 GOSUB250:GOTO300
170 Z$=KEY$
175 P=X:O=Y
180 IFZ$=" "THEN225
185 IFZ$=""THEN190ELSEN=ASC(Z$)
190 IFN=8THENX=X-6:IFX<20THENX=224
195 IFN=9THENX=X+6:IFX>225THENX=21
199 IFN=10THENY=Y+4:IFY>140THENY=140
200 IFN=11THENY=Y-4:IFY<18THENY=18
205 IFTA=0THENCURSETP,O,3:CHAR43,0,2
210 TA=0:CURSETX,Y,3:CHAR43,0,2
220 RETURN
225 IFLS=0THENPING:RETURN
230 TA=1:LS=LS-1:CURSETLS*10+65,182,0:CH
AR116,0,0
235 B=B+1
240 L(B)=X:L(B)=Y
245 CURSETX,Y,3:CHAR43,0,1:RETURN
250 IFB=0THENRETURN
255 FORM=1TOB:FORW=1TO2
260 CURSETL20,L60,3:DRAWL(M)-120,L(M)-15
6,2
265 NEXTW:ZAP
270 FORD=1TOOSTEP-1:FORG=1TO5
275 CIRCLED,D:NEXTG:SHOOT:NEXTD,M
280 CURSETX,Y,3:CHAR43,0,1
285 TA=0:B=0:Z$=KEY$
290 RETURN
300 BX=BX+1:M=BX*20
305 FORZ=1TO8
310 IFJ(Z)=1THEN330
315 RC=QX(Z)+BX*QZ(Z)
320 IFPOINT(RC,M)=0THENJ(Z)=1:H=H+1:GOTO
330
325 CURSETRC,M,3:DRAWQZ(Z),20,1
330 NEXT
335 IFH=8THEN380
340 IFBX<7THEN145
345 FORZ=1TO8
350 IFJ(Z)=1THEN370
355 CURSETQX(Z)+8*QZ(Z),165,1
360 HTS=HTS+1
365 GOSUB500
370 NEXT
380 CURSET0,0,0:FILL160,1,0:CURSET0,0,0:
FILL160,40,64
385 FORG=18210189:CURSET10,6,0:DRAW200,0
,0
390 NEXT
395 CLS
399 SC=SC+(H*20)+(LS*20)+1000:IFHTS=0THE
NSC=SC+5000
400 IFATC=1ANDHTS<7THENSC=0
405 PRINT" HITS ON CITY: ";HTS;"
CORE: ";SC
410 IFHTS<7THEN90
415 CURSET120,150,0:EXPLODE
420 FORZ=1TO20:CIRCLEZ,1:NEXTZ
425 FORZ=20TO1STEP-1:CIRCLEZ,0:NEXT
430 CURSET70,65,0:A$="CITY DESTROYED"
435 GOSUB1500
440 CURSET70,80,0:A$="PRESS 'P' TO PLAY
:GOSUB1500
442 CURSET70,95,0:A$="PRESS 'E' TO END
GOSUB1500
445 GETP$:IFP$="p"THENGOTO75
447 IFP$<>"e"THEN445
450 TEXT:CALL£F888:END
500 EXPLODE:FORC=1TO5:CIRCLEC,1:NEXT
505 FORC=5TO1STEP-1:CIRCLEC,0:NEXT
510 RETURN
1000 CLS
```

```
1010 A$="...RED ALERT...CITY UNDER ATTAC
K...USE CURSOR TO AIM...SPA
CE TO FIRE"
1020 PLAY1,0,4,500:MUSIC1,3,1,0
1030 DOKE£26B,£010A
1040 CLS
1050 FORZ=1TO102
1060 PLOTO,11,LEFT$(A$,38)
1070 PLOTO,12,LEFT$(A$,38)
1080 A$=MID$(A$,2)+LEFT$(A$,1)
1090 WAIT8:NEXTZ
1100 PLAYO,0,0,0
1110 RETURN
1500 FORZ=1TOLEN(A$)
1510 CHARASC(MID$(A$,Z,1)),0,1
1520 CURMOV6,0,0:NEXTZ
1530 RETURN
2000 ZX=46080
2010 FORV=1TO6
2020 READC:D=8*C
2030 FOR0=0TO7:READF
2040 POKEZX+D+0,F:NEXT
2050 NEXT
2060 RETURN
3000 DATA111,255,255,255,255,255,255,255
,255
3010 DATA112,0,3,3,3,3,7,7,7
3020 DATA113,96,96,96,96,96,255,255,255
3030 DATA114,0,0,0,0,0,255,255,255
3040 DATA115,96,96,96,96,99,99,99,255
3050 DATA116,8,8,8,8,28,8,20,20
```

ARCADE ALLEY

BIG K

ARE YOUR

IF YOU, like me, have trouble fighting for air in most arcades then Nintendo's *Punch Out* could be the work-out you're looking for.

Set in the grime and gore of the boxing ring, *Punch Out* brings you a blow-by-blow encounter with a series of ugly-mug pugilists — all of whom are intent on stopping you as you K.O. your way to the Heavy-weight throne. At each level the going gets harder, as the fights get longer and the fighters get stronger (and bigger and faster and meaner . . !)

The games graphics are ruggedly simplistic with little more than the ropes, the ref and the canvas on show (though the latter is the last thing you want to see!) The atmosphere is heavy and the vox-box grim as it shouts 'Let's keep it clean . . . Now come out BOXING!' Visually you're represented by the ingenious bare-bones (literally) of a 3-D fighter who reacts with the speed of light to your every whim. Capable of nearly every move in the book (bar head-jobs of course) you use a combination of buttons and joy-stick to defend and attack in the finest Marquis of Queensberry tradition.

The joystick enables you to weave your way through the round whilst keeping your guard up or down as the case may be. The buttons offers you the chance of counter-attack with left/right blows to the head or body. And when the time is right you get the chance to take a decisive K.O. blow with either a thundering uppercut or a murderous hook.

The first opponent is a measly wimp of a man called Glass Joe — but even he poses a threat until the right combination of bobbing and boxing is achieved — a matter of juggling thumb and joystick. Every punch thrown is greeted by cheers from the crowd and orders from your corner — 'body-blow, body-blow, jab, jab, UPPERCUT!!' (it can get pretty heavy when you're being egged on like that . . .) Your success, though, depends on the power-meter and the status-meter. The latter indicates (with alarming speed) your/the champ's respective stamina — a good series of punches and you can be on for a winning blow; a drop of guard, a kick right from the Champ and you're out of stamina and on the deck. The former shows your punching power on a gauge which rises steadily as you attack and flashes 'K.O.' when you've got your man on the ropes — miss it and you're back down the scale and in danger of a quick rally by your foe. The drawback unfortunately on both of these is their positioning — if you've got your chin down and your guard up then it's hard to check your situation.

As in a real fight it's all against the bell, with the rounds lengthening as the fights get harder. If you fail to K.O. your man within the bell then you're out — there's no chance of a points decision in this game! Between rounds your next opponents vital statistics (and we're not talking 38-24-36 here) are flashed up (though far too rapidly for my liking) showing nationality, world ranking, weight, etc. and then it's back into the ring.

For far too long ten-stone weaklings like myself have been knocked senseless by great muscle-bound idiots so it's a relief to find *Punch Out* offers a little hope away from the real fisticuffs. In just five sessions (at thirty pence a throw) I had personally floored such brutes as Glass Joe (rated ninth in the world — but just a sucker for my glove) Piston Hurricane and Bald Bull. And I was hardly sweating. Charles Atlas? Rocky? Forget it . . . I was a contender!

OUREADY FOR THE BIG K.O.?

'Cos if you're not, stay well clear of Nintendo's *Punch-Out*. DAVID DORRELL sags to the canvas with a streaming nose and a ruptured gut, while a smirking DAVID CORRIER snaps busily away from the comfort of his ringside seat.

PUNCH-OUT's HEAVYWEIGHT HIERARCHY
(in ascending order of pugilistic prowess)

GLASS JOE — French, weedy and rated ninth in the world.

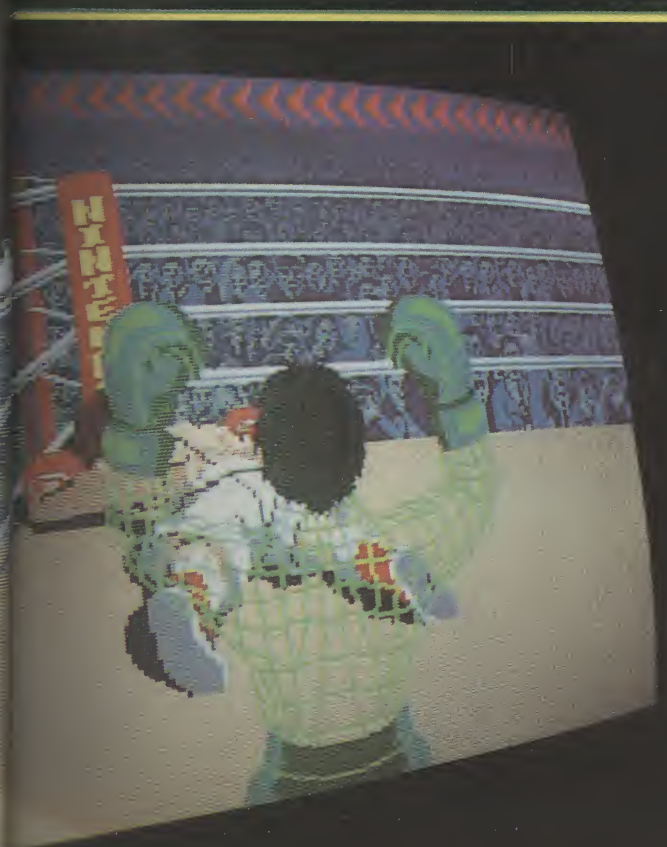
PISTON HURRICANE — Cuban, hard and a bit of a heel, rated eighth in the world.

BALD BULL — as mean as Mr. T and twice as fast, rated seventh.

KID KWIK — American and faster than a McDonalds at getting you down.

PETER PASTA — Italian and smarmy with it — a walking Mafia man.

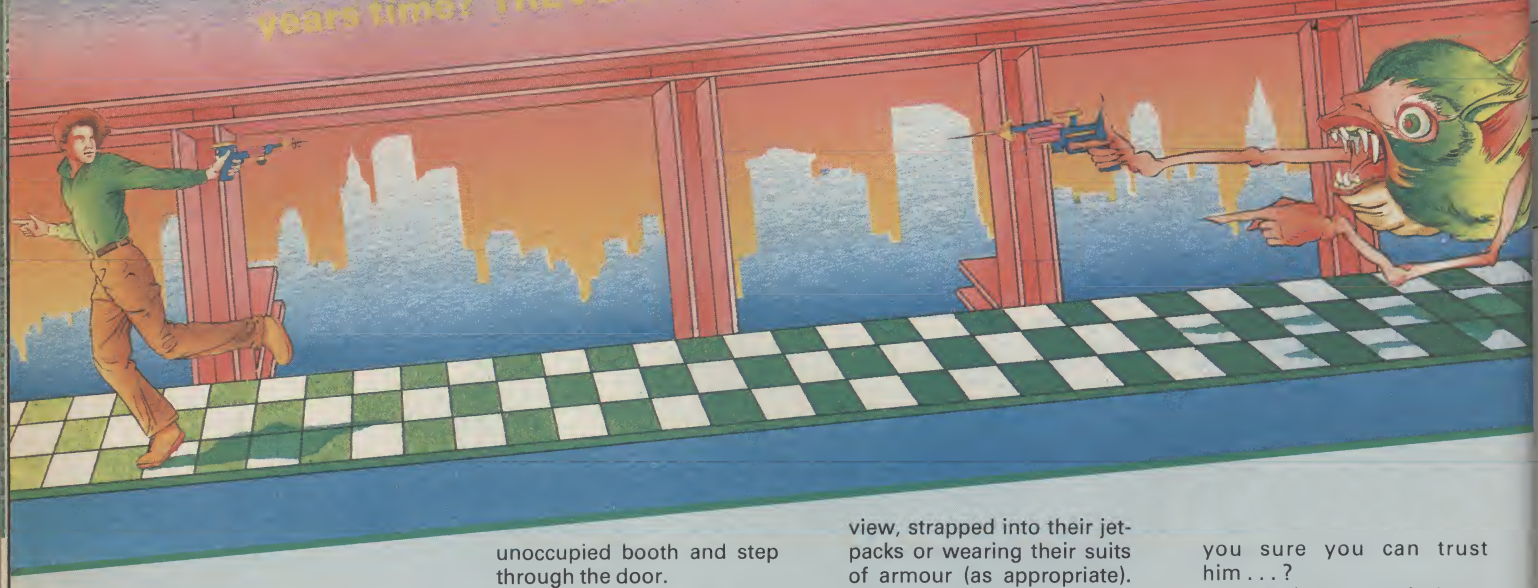
MR. SAND MAN — World champ, American and guaranteed to put you to sleep but fast.



ARCADE ALLEY

ARCADE of the FUTURE?

In the USA they're saying that Arcades are deadsville, Dad. Yet at the same time the technology has never seemed more promising. Assuming the genre survives, what will a typical arcade look like in ten years time? TREVOR MENDHAM speculates . . .



EVER SINCE the arrival of the first *Space Invaders* machines just a few short years ago, the quality and realism of arcade games has been improving at an exponential rate. The games we play now would have been inconceivable in those early days. And yet despite this rapid advance I believe that we have not yet come anywhere near the form's ultimate potential. The video game of tomorrow will be as far removed from that of today as *Dragon's Lair* is from, well, *Space Invaders*. For this reason I'd like to speculate on the shape that this ultimate game of tomorrow might take.

In the arcade of tomorrow, you are unlikely actually to see anybody playing a game! Rather, there will be groups of half a dozen or so enclosed 'booths' clustered together, each just large enough to contain one player. Above each set of booths, a master screen will show a sample of the game, along with instructions, details of price and the names of the high scorers.

On finding a game that takes your fancy, you place your money (probably a five pound coin) in the slot of an unoccupied booth and step through the door.

The booth is circular, with the controls mounted on a stick set in the floor which can be adjusted to suit your height. In the more uptown arcades, there may even be a chair for you to sit on during the game — though true video experts are likely to reject this as a distraction. You close the door and press the start button. The booth goes dark, and you enter into another world . . .

Reality

The canvas on which the action takes place is not just a small, flat TV screen, but instead consists of the whole of the wall in front of you! With full 180 degree projection you really feel *part* of the game, rather than just an outside observer. What is more, the pictures are not just computer graphics, but are generated by laser disc technology and are based on real photographic material. When combined with quadrophonic sound, it becomes extremely difficult to remember that it is not real but merely an electronic fantasy.

The scene set — be it a view into deep space or an ancient castle — the game begins as your opponents come into view, strapped into their jetpacks or wearing their suits of armour (as appropriate). Now the reasons for the clusters of booths becomes apparent, for whilst some of the enemy are controlled by the computer, the rest of your opponents are your fellow players! And you have no way of determining which is which! Until, that is, you get close enough to make out their faces. For the 'men' in this game are not just anonymous graphic blobs, but all have faces and features. Those belonging to the computer will have those chosen randomly from a stock of photographs, whilst those controlled by players will use photographs generated by the camera hidden in the wall which is constantly observing you. And of course, just as you can see the faces of the others, so they can see you — and, if you are close enough in game terms, the microphone in your booth will allow you to talk to each other!

Friend or Foe

Of course, if you have recognised one of your opponents as a friend you must then decide whether to work together or whether to kill him for the points. And if you decide on an alliance, are you sure you can trust him . . . ?

Does that scenario have you drooling? Well, as any science fiction reader will tell you, that's just the start — there are many more possibilities, leading up eventually to direct mental stimulation and game control. However, I have deliberately limited my speculations for one very good reason.

It Exists

That is that everything I have mentioned above is possible today. The technology already exists, it is simply a case of bringing it together. We have had the ability to produce the hardware for a long time — it is no more advanced than that of a flight simulator. As for the software, well, there are professional, industrial programmers who are more than capable of handling the complex graphics manipulation required, whilst when it comes to the games side there is a vast pool of talent currently cutting their teeth on the home computers. The game I've described could be in the arcades within two years. All it would need would be an entrepreneur with a awful lot of capital — and even more guts!

Midsummer is never a very good time for computer companies, but this July was disastrous for two state-of-the-art operations — America's Atari and Britain's Imagine Software. Deeply in trouble, short of money and beset by the fruits of several bum decisions, both operations all but closed down in their present form six weeks ago. What went wrong, what are the lessons for others, and can anything be salvaged from the wreckage? TONY TYLER assesses . . .

AFTER THE CRASH

REQUIEM AT SUNNYVALE

Six weeks ago an American businessman named Jack Tramiel put 185 million dollars on the table under the noses of Mr Warner and his Brothers and a few minutes later was walking out of there with a company called Atari metaphorically under his arm. Tramiel had also guaranteed to pick up Atari's debts — valued at three times the cash price-tag. All the same it was a chickenfeed purchase. By selling off the lion's share of Atari, Warners had put a stop to a miserable five years of steady losses and marketplace disappointment. What went wrong?

The answers must be, in no particular order: terrible management decisions; the existence of CBS-Coleco and the existence of Commodore International.

Atari is the company who, more than any other — certainly in the United States — began it all. It has been losing money almost ever since, certainly since founder Nolan Bushnell sold off his Sunnyvale operation to Warner and the Brothers more than five years ago for a multi-million sum. Despite an excellent early hardware design lead, high manufacturing standards, and a second-to-none reputation as a games concern — not to mention a peerless coin-op division that has always been a pioneer (and indeed which Warners have hung on to) — the company's men-in-charge then became confused over and over again. The way in which the US market at first shaped up nicely for the switch from games machines to computers, then changed its mind — then partly changed it back again and got interested in proper computers after all — led Atari's management to make a series of ghastly wrong decisions, blunders that unfortunately cost the company money and credibility at a time when the lead due to the Bushnell years was evaporating rapidly.

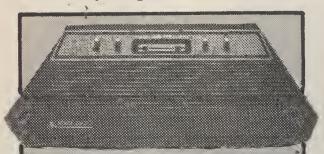
In hardware, the company had got off to a good second leg (the VCS being its first) with the 400/800 series, 6502 machines ahead of their time in many ways, with sprites, 256 colours, RAM up to 48K and already-available disc drives and other peripherals. Plus a vast, quality library of software in ROM form (not all of them were VCS upgrades). This range established a good user base in the USA; and as it was considerably better than anything up to Apple II status, dominated the lower-price market. Commodore's elderly PET and low-RAM VIC-20 paled alongside the Atari models. At the same time the company were committed to produce full-time for the seemingly everlasting VCS.

The ball was first fumbled 15 months ago, when Apple upgraded the II to the IIe, Commodore introduced the "Vic-64", and at the same time it was becoming clear that Atari would soon have to choose between the videogame and computer camps. There is little doubt that there were voices in the company raised at this time arguing for an all-out computer strategy. Unfortunately there still were (and are) all those VCS owners out there. The company decided to continue pursuing both at the same time. It must have seemed a sane enough strategy then; though in retrospect it seems clear that it served only to over-expand the company and spread its resources still more thinly, at a time when research projects were already promising to take Atari further and further into more exciting and expensive areas than low-

ATARISOFT STUFF: a move along the right lines, but it came too late.

grade domestic computer manufacture. AtariTel — a grandoise networking plan — was hatched (and lingers yet). Widgets like AtariLab, and the usual controller additions — trackball, graphics pad, and so on — proceeded more or less to plan. All these had to take up a share of the overall company resource. And Atari's prices made punters grumble.

The next wave of hardware (Spring, 1983) was dis-



THE 2600 VCS. It made Atari . . .

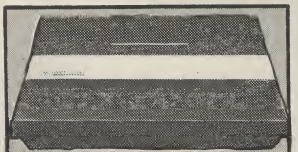
astrous: the 5200 game system in tandem with the 1200XL computer. The 5200 was a re-boxed 400 computer with a widely-disliked joystick (it was never on sale in the UK), distinguished also for near-total incompatibility between it and the 2600VCS, for whose owners' sake the whole project had been laid on in the first place.

The 1200XL was a computer, another machine featuring 100% incompatibility with any other Atari product. In retrospect it emerges as an early prototype for the XL range and should never have been marketed at all. The 1200XL was ditched shortly after launch but the 5200 turkeys on. Now, of course, it has been joined by yet *another* game system, the PRO 7800, compatible (at least) with the VCS. So *that* mistake has, at last, and much too late, been put right. And Atari finally has a product with which to make one last, despairing counterattack against Coleco.

It was when Atari was first reeling away from the initial Coleco thrust into its traditional turf that one began to hear odd stories filtering out of Ca. concerning Atari's desperate plight re: unsold VCS ROMs. As legend unkindly had it, the bulk of these were copies of those very Lucas/Spielberg movies — *Raiders of the Lost Ark* and *E.T.*, particularly, as it happens, *E.T.* — for which Atari had allegedly paid such enormous sums. As Parker have also discovered, good films as spin-offs are lousy compared to good arcade rights (though if *these* should *also* be based on films then you have a different story). *Raiders* was actually a thoughtful game which made much use of the VCS's capabilities; its trouble was it was too difficult. So it, and *E.T.*, simply sat on shelves up and down America until storekeepers refused to take any more Atari cartridges unless the company helped them unload the deadbeats. Eventually 450,000 *E.T.*'s were assembled, driven out to the New Mexico desert in a convoy of twenty-tonners, and then buried — with the aid excavators and earth-movers — in a gigantic hole in the ground not far from White Sands nuclear testing site; all under the silvery light of a Western moon. It's a nice story , anyway.

Coupled with news of disasters real and embroidered came the news that the company had bombed out on the Dow Jones for the second year running. The computer switch seemed to be happening after all, just when Atari has lost its edge, and now Commodore, with its 64 model, was making the running. Legal gripes with Texas Instruments and the software houses Activision and Imagic — the first of a whole series of energy-sapping legal battles — distracted the company. At this time the XL models were only just appearing. AtariTel was getting nowhere, other widgets were more or less on time — but overall Atari wasn't getting enough of the new action to do more than slow down its rate of obvious decline. Staff were cut. Whole departments went, budgets were cut to the bone. Most of the manufacture was shifted to Taiwan and South Korea.

Alan Alda was fired.



. . . But the 5200 nearly broke them.

With hindsight it seems that the company was more or less on course and conceiving the right ideas until the need for a 400/800/VCS general upgrade became obvious. Then the company wasted a whole critical year floundering about with the 1200XL and the doomed 5200, while wasting its diminishing strength trying

The 800XL: a good machine and a good range — but again, it didn't make up for lost ground.

to maintain a presence everywhere else on the computer front. In fact, they are still a year behind — a year they don't have.

Inevitably this year's Dow Jones has been as bad as any in the past three years; and for some months before Tramiel the company had been rumoured to be up for sale.

Similarly the company are unlikely to abandon, after all this time, the 20 million VCS owners. (This of course is a partial argument for the 7800 as well.) Therefore they must keep some software development. This seems to mean a computer software division as well, so those jobs are probably safe too. This in turn supports the idea of continuing the hardware . . . and so it goes on.

One area that must be taken care of is serious applications software. Atari machines have been relatively ill-served in the past in this area, and the computers have suffered in the marketplace as a result. The 64 is no better than the Atari as a games machine, and as a small business micro it only shows up well because of its software. Atari has never had this quality of business support; nor sought it, alas.

Above all the company has got to think international (AtariSoft is a good move) with all its heart — and this means bringing its prices heavily down across the board if it is to compete with Tramiel's old company, now emerging as *the* machine for the first-time buyer. Atari have already all but lost the videogame war with Coleco. Now, to survive at all, they must fight back, either there, or against Commodore in the computer market.

SHOWING NO MERSEY

THEY HAD the highest profile of any British software company, games or not; they had some of the ritziest offices in microdom; they had had a series of high-scoring hits and possessed even higher hopes for the future. Despite this (cynics will say, 'Because of this'), last month the mighty Imagine edifice all but crumbled into ruin, the first and (to date) most notable of Great British Software Disasters.

Putting aside for a moment the thought that the men at Imagine were not exactly top of the popularity stakes (the 'they brought it on themselves' theory, though how this works has yet to be convincingly demonstrated), the

The Imagine 'A' Team: now relegated.

virtual demise of this once-towering operation is bad news for everybody.

It's safe to say that Imagine's problems probably began over a year ago, with over-expansion, over-confidence and a few runaway egos wreaking havoc. The easy returns of the previous year (1983) had convinced many — not just Imagine — that this business is replete with easy pickings. Add to that the pronounced showbiz mentality in games software writing, and you have a situation where several seriously wrong decisions can be taken with the utmost of ease.

It now seems clear that the first major problem was an old favourite: overstocking coupled with a need for liquidity. Translated, that means duplicating too many copies of new games (and perennials), basing sales forecasts on a mixture of gung-ho optimism and overconfidence generated by previous, easy, high turnover.

The second major problem grew out of the first. As is now well-known (but was heavily denied at the time), just before last Christmas Imagine were secretly approached by the publishers Marshall Cavendish, famous for their 'part-works'. MC wanted to produce the ultimate how-to computer p/w — you guessed it, to be called INPUT — and as an incentive to buyers, they wanted to attach, to the cover of each issue, a freebie computer game or piece of instructional and entertaining software. Imagine tendered for the job and were given the contract.

What went wrong? There's no doubt that the in-house expertise of the company was, and remains, fully sufficient to the task. It seems (here Unkind Legend once again takes over) that Imagine spent the advance of several hundred thousand pounds (not £5 million as rumoured at the time) on motorbikes and the pop-star-style fast living . . . and woke up one morning to an acute case of deadline-itis. Here overconfidence again took over (it's said), and a load of substandard stuff was churned out very fast, and given to MC.

However by this time MC had a very shrewd idea of the state of the art and what they knew told them that the contracted-for games were simply not up to scratch. They rejected them outright — which left Imagine in the position fo having to repay the advance (around a quarter of a million). And INPUT went on sale without anything attached to the cover at all.

For Imagine, repayment proved so difficult that within a day or so their problems (exacerbated by poor security — see below) had become common knowledge. It now seems clear that an emergency aid package, possibly from a merchant bank, came up with the cash, short-term, but (like the IMF giving money to Mexico) imposed so many swingeing conditions concerning repayment and interest that if anything the company's real position grew actually worse.

The directors — Dave Lawson, Mark Butler, Bruce Everiss and Ian Hetherington (plus one other mystery backer, so far un-named) — appear to have banked all on a recovery plan based on the following three stages.

(1) Raise as much cash as possible on the sale of back-catalogue titles.

(2) Trim the overheads to the bone.

(3) Re-make the catalogue around the vaunted and much-hyped 'megagames' *Psclapse* and *Bandersnatch*.

(4) Take it from there.

(1) was partially implemented, not without major difficulty, later than had been hoped, and for a far lower figure than can have been wished (to a company called Beau Jolly, reportedly for less than £1.00 per copy). Incidentally, it is widely thought that Imagine's half-assed attempt to lower their prices across the board (to £1.95 from £6.95) at this time (shortly afterwards aborted, for reasons that were never very convincing) was an attempt to achieve (1). Alas, a move that, six months before, would certainly have rescued them, came too late . . .

The reduction of overheads was relatively easy, considering the high profile, the six Liverpool offices, the abundance of staff and the high living. In fact, it turns out that not all of the famous and expensive motor cars actually belong to the company and therefore count as capital assets. Many of the cars are leased . . .

Meanwhile, the main Sir Thomas Street office was closed, as were a couple of warehouses. Staff were laid off — especially bad news in Liverpool.

As for (3) the 'megagames', these remain an asset (and are duly being fought over by the survivors). It seems that by a combination of turbo-loading techniques and extra (dongled) hardware, the company were — are — on the verge of a new class of game altogether. Even so, as others are discovering (Hi, Ultimate!) the extra development time demanded by extra-good games costs money . . . cash the comany no longer had.

The can of worms first opened up by the Marshall Cavendish fiasco reached ugly fruition two months ago with a sudden, new crop of rumours concerning the company. It was said that one (or maybee two) of the directors had done a runner to the USA with a bag of money. Fist-fights were hinted at . . . Actually, it now seems as if Dave Lawson, the slight and quietly-spoken founder-figure/chief programmer, and Ian Hetherington, the bulky former finance director of Imagine *were* in California last month: to *raise* money! It also seems as if they weren't too successful, since the rumour's final form now has Lawson and Hetherington forming an entirely new company called FinchSpeed (assets: the megagames; the company cars), while Mark Butler, already immobilsed by a bike crash, has reportedly been relegated to a second-row forward's slot in the new outfit (against his will). Meanwhile Bruce Everiss, former Operations Director, has departed altogether for pastures new . . .

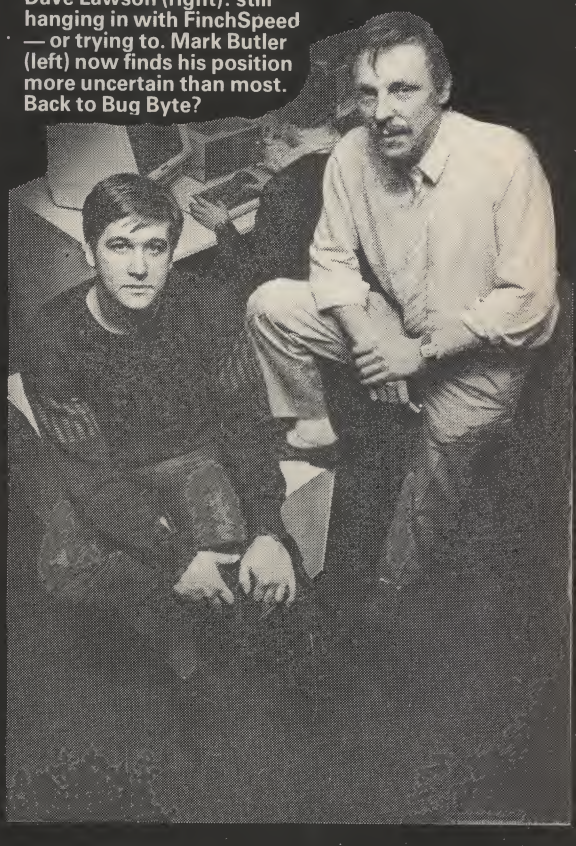
Finally, it was reported a few days before time of writing that the rump of Imagine has recently sold off 111,000 back tapes (presuambly ones that Beau Jolly didn't want) at (wait for it) 30p per copy! And a sinister note has been struck by the reported "interest" (absolutely nothing more as yet) taken by the Merseyside Police in Imagine's affairs, especially involving non-payment to creditors.

The easiest thing to say is that it was all inevitable. The combination of easy money, youthful self-confidence and more than a hint of meglomania, led to the Biblical result: unmitigated disaster. This would be easier to swallow if it invariably happened. It doesn't. A great many pop stars are living, walking proof that ego, too much cash and big-headedness do not necessarily lead to ignominious downfall.

The truth is that Imagine, for all their unfavourable image, were caught out, like others before them, by a combination of one or two bad decisions, a change in market trends and a continual lack of ready cash. They also believed in themselves to a point where it became quite easy to ignore mounting evidence to the contrary . . . So have a snide laugh if you like, but don't laugh too hard, or you may not see something similar creeping up on you. Nobody is immune from failure.

What now? Lawson remains an excellent games, designer, the megagames are probably very good — and that's all one can safely say at this stage. Start Againsville in fact. But perhaps the shock of the whole event may force realism on to the survivors: we may well hear more of FinchSpeed.

Let's hope so. For despite all the hokum the disinformation and the bragging, there was always plenty of talent there.



Dave Lawson (right): still hanging in with FinchSpeed — or trying to. Mark Butler (left) now finds his position more uncertain than most. Back to Bug Byte?

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```
10 POKE53280,5:POKE53281,5:PRINT"■" CL=54272
40 Z$="  ":FORI=1TO39:Z$=Z$+" ":NEXT
50 B$="":FORI=1TO40:B$=B$+"▒":NEXT
50 N=0:K=1184:P1=0:A1=0:TR=1
70 DEFFNA(X)=INT(X*RND(1))
80 DEFFNB(X)=INT((8-9*RND(1))/7)
100 PRINT"■"TAB(16)"■* GOLF *■■
110 PRINT"■WELCOME TO THE LINKS! THIS";
115 PRINT" IS AN 18-HOLE COURSE OF PRO";
120 PRINT"FESSIONAL STANDARDS■"
125 PRINT"COURSE RECORD IS 2 UNDER ,"
126 PRINT"SO PLEASE REPLACE DIVOTS AND SHOW"
135 PRINT"COURTESY TO YOUR FELLOW GOLFERS.
145 PRINT"■HAVE A GOOD ROUND SEE YOU AT THE
19TH!"" 150 PRINT"■■■WHAT IS YOUR HANDICAP■"
160 INPUTH:IFH>0ANDH<30THEN190
170 PRINT"■PGA RULES HANDICAP 0-30":GOTO150
190 PRINT"■■IFFICULTIES AT GOLF■
200 PRINT"■1.HOOKING
210 PRINT"2.SLICING
220 PRINT"3.POOR DISTANCE
230 PRINT"4.TRAP SHOTS
240 PRINT"5.PUTTING■
250 INPUT"■YOUR WORST";F:F=INT(F)
260 H=INT(H):IFF>0ANDF<6THEN290
270 PRINT"DON'T BE SHY":GOTO 250
290 PRINT"■SELECTION OF CLUBS■■  NO.■
300 PRINT"YARDAGE      CLUBS      1-4
310 PRINT"■280-200     1-4 WOODS  11-15
320 PRINT"200-100      1-5 IRONS  16-19
330 PRINT"100- 0       6-9 IRONS
340 PRINT"■■TO FADE OR DRAW THE BALL";
350 PRINT"TYPE F OR D WHEN   ASKED"
360 PRINT"■TO HIT STRAIGHT TYPE RETURN
370 PRINT"■■***** WARNING *****■■
380 PRINT"DON'T HIT IT TOO HARD■
390 GOSUB9000:GOSUB1700:GOSUB9000
400 REM GENERATE HOLE
410 Z=K:G=102:N=N+1:READD,P:PRINT"■■■
420 FORI=1TO18:PRINTB$;:NEXT
430 PRINT"■■HOLE";N,:S=4:A=0
440 PRINT"■DISTANCE";D;"YDS ";"■PAR";P
450 T=K+280:E=1:FORI=1TO40:FORJ=1TOS
460 POKET+CL,0:POKET,160:POKET+CL,5:T=T+40*E:
NEXTJ:T=T-40*E  470 U=FNB(1):S=S+U
480 IFS<40RS>8THENS=S-U:GOTO470
490 T=T+1+40*FNB(1):E=-E:NEXTI
500 S=3:T=T+79:FORI=1TO5:FORJ=1TOS
510 O=224:IFI=3ANDJ=2THENO=43:O=T
520 POKET,O:POKET+CL,13:IFO=43THENPOKET+CL,6
525 T=T+40*E:NEXTJ:T=T-40*E
530 U=FNB(1):S=S+U
540 IFS<3THENS=S-U:GOTO530
550 T=T-1+40*FNB(1):E=-E:NEXTI:O=69
555 FORI=1TO8+FNA(8)
560 S=K+O+FNA(9)+40*FNA(15)
570 IFPEEK(S)=160THENPOKES,87:POKES+54272,7
580 NEXT:IFO=69THENO=55:GOTO555
590 POKEK+360,148:POKEK+360+CL,2
600 X=0:Y=19:V=75:W=(Q-K-37)/20:L=1
605 IFD>450ANDD<550THEN1200
610 IFRND(1)>.6THEN1100
620 PRINT"■■■
```

OPEN

by JON BULL

```
830 IFRND(1)>.3+H/90THEN880
840 Q=(H+30)*(RND(1)+.1)*π/500
850 IFF>2THENU=.5:GOTO870
860 Q=Q*1.5:U=.9:IFF=2THENU=.1
870 IFRND(1)>UTHENQ=-Q
880 IFV=XTHENT=π/2:X=X-SGN(Y-W):GOTO890
885 T=ATN((Y-W)/(V-X))+Q-QQ
890 U=X+SGN(V-X)*INT(M*COS(T)+.5)*TR
900 Y=Y-SGN(V-X)*INT(M*SIN(T)+.5):X=U
905 TR=1
910 IFX>79ORY<00RY>35THEN1300
920 S=K+INT(X/2)+40*INT(Y/2):T=PEEK(S):JB1=S:
JB5=PEEK(S+CL) 930 U=126:IF(YAND1)=1THENU=123
940 IF((XAND1)=1AND(YAND1)=0)THENU=100
950 IF((XAND1)=1AND(YAND1)=0)THENU=124
960 POKEZ,G:POKEZ+CL,JB5:POKES,U:G=T:JB5=PEEK
(S+CL):Z=S:POKES+CL,0
970 FORI=1TO9:POKES,G:FORJ=1TO99:NEXTJ
980 POKES,U:FORJ=1TO99:NEXTJ:NEXTI
1000 GOSUB2500:IFX=VANDY=WTHEN1600
1010 IFG=224ORG=43THEN6000
1020 IFG=102THENL=2:GOTO7000
1030 IFG=87THEN7500
1040 IFG=193THENL=4:GOTO8000
1050 IFG=174THEN8500
1060 L=1:GOTO640
1100 U=K+103+FNA(11):T=1:FORI=0TO4
1110 JB=PEEK(40*I+U):IFJB=32ANDPEEK(JB+54272)
=5THENU=U+480:T=-1:GOTO1130
1120 NEXT
1130 FORI=1TO12:JB2=U+T*40*FNA(5)-FNA(8):POKE
JB2,65:POKEJB2+54272,9:NEXT:GOTO62
1200 C=K+12+FNA(8):U=1
1210 IFRND(8)<.5THENC=C+13:U=-1
1270 FORI=1TO18
1280 POKEC,174:POKEC+54272,6:IFRND(1)>.4THENC
=C+U 1290 C=C+40:NEXT:GOTO620:REM WATER
1300 IFX>90THEN1360:REM O.O.B
1320 IFX>79 THENX=79
1330 IFY>0ANDY<36THEN1410
1340 IFY>35ANDY<48THENY=35:GOTO1410
1350 IFY<0ANDY>-11THENY=0:GOTO1410
1360 GOSUB2000
1370 PRINT"TOO MUCH CLUB-LOST BALL"
1380 PRINT"PENALTY2 STROKES":A=A+6
1390 GOSUB2500
1400 PRINT"":GOTO6490
1410 GOSUB2000
1420 PRINT"OUT OF BOUNDS-DROP BALL"
1430 PRINT"PENALTY 1 STOKE":A=A+1
1440 GOTO920
1500 PRINT"FADE OR DRAW?"
1510 INPUT"";A$
1520 IFA$="F"THENQQ=.15
1530 IFA$="D"THENQQ=-.15
1540 GOTO760
1600 PRINT" YOU HOLED OUT !!!!"
1610 PRINT" LUCKY!!":GOTO6400
1700 PRINT"NOTATION USED
1710 PRINT"
1720 PRINT"=ROUGH
1730 PRINT"=TRAPS(KEEP OUT!)
1740 PRINT" =FAIRWAY
1750 PRINT"=GREEN
1760 PRINT"=THE HOLE
1770 PRINT"=THE TEE(OF COURSE!)
1780 PRINT"=WATER(LOST BALL!)
1790 PRINT"=TREES":RETURN
2000 PRINT"";Z$;:PRINTZ$;PRINTZ$;
2010 PRINT"";:RETURN
2500 FORI=1TO2000:NEXT:RETURN
5000 PRINT"ON THE GREEN IN";A
5010 IFRND(1)>.6THENJA=1.27:GOTO6060
6020 IFRND(2)>.5THENJA=1.27:GOTO6040
5030 PRINT""TAB(15)"SLOW GREEN":JA=.73:G
OTO6060 6040 PRINT""TAB(15)"FAST GREEN"
5060 KK=K+320:M=1:T=1:IFF=5THENM=3
5070 GOSUB2500:GOSUB2000
5080 FORI=40TO79:POKEKK+I,99:POKEKK+I+54272,6
:NEXT
6310 GOSUB2500:GOSUB2000:GOTO6140
0:POKEKK-11+CL,10
5100 POKEKK-10,160:POKEKK-10+CL,10
5110 D=INT(D*SQR((X-V)↑2+(Y-W)↑2)/31)
5120 IFD>58THEND=56+FNA(3)
5130 JB4=KK+29-INT(D/2):POKEJB4,81:POKEJB4+CL
0 5140 PRINT"YOU ARE";D;"FEET FROM THE PIN"
5150 INPUT"PUTTING STRENGTH (0-13)  ";C
5200 IFC>0ANDC<=13THENA=A+1:GOTO6240
5240 E=C*(4+M*RND(1))-2.5+(RND(1)*(H+30)/40)*
M:E=INT(E*JA):M=M*.8
5250 FORI=1TOE:D=D-1:S=INT(KK+29-D*T/2)
5260 FORJ=1TOI:NEXTJ
5270 POKES,S1:POKES-T,32:POKES+CL,0
6280 IFS<>KK+29THENPOKEKK+29,93
6290 NEXTI:REM **MIGHT RUN OFF GREEN
6300 IFD<0THENT=-T:D=-D
5305 IFS=KK+29THENFORI=1TO99:NEXT:POKES,93:GO
TO6400 6400 GOSUB2500:REM PUTTING
5410 PRINT"YOU'RE DOWN IN";A;
6420 ON(A-P+3)GOTO6460,6450,6440,6490,6490
6430 PRINT"-KEEP YOUR HEAD DOWN":GOTO6500
6440 PRINT"A PAR, NICE GOING":GOTO6500
6450 PRINT"-A BIRDIE:WELL PLAYED!":GOTO6500
6460 IFP=3THEN6480
6470 PRINT"-A GREAT BIG EAGLE!!!":GOTO6500
6480 PRINT" A HOLE IN ONE!!!!!!!"
6490 PRINT
6500 P1=P1+P:A1=A1+A:IFP1=A1THEN6550
6510 A$="UNDER":IFA1>P1THENA$="OVER"
6520 PRINT"YOU ARE";ABS(P1-A1);
6530 PRINTA$;"PAR AFTER";N;"HOLES
6540 GOTO6560
6550 PRINT" LEVEL PAR AFTER";N;"HOLES
6560 PRINT"";:GOSUB9000
6570 IFNK18THEN400
6580 REM E.O.G
6590 PRINT" ***GAME OVER***
6600 ONINT((A1-P1)/5+2)GOTO6730,6700,6660
6610 PRINT"YOU'VE HACKED YOUR WAY";
6620 PRINT"ROUND BADLY.BEST TAKE";
6630 PRINT"SOME LESSONS BEFORE YOU";
6640 PRINT"DIG UP THIS COURSE AGAIN
6650 GOTO6900
6660 PRINT"AN AVERAGE ROUND-YOU";
6670 PRINT"SHOULD IMPROVE NEXT TIME
6680 PRINT"SEE THE CLUB PRO FOR A";
6690 PRINT"FEW TIPS":GOTO6900
5700 PRINT"CONGRATULATIONS!YOU P";
6710 PRINT"LAYED A GOOD ROUND ! !";
5720 PRINT"KE YOUR STYLE":GOTO6900
6730 PRINT"AN UNDER PAR ROUND!!
6740 PRINT"NEXT TIME YOU PLAY TRY";
6750 PRINT"A HIGHER HANDICAP
5900 END:REM**PHEW!!**
7000 REM ROUGH
7010 GOSUB2000:IFABS(Y-17)>10THEN7030
7020 AA=.75:PRINT"IN LIGHT ROUGH":GOTO7040
7030 AA=.5:PRINT"YOU ARE IN HEAVY ROUGH
7040 GOSUB2500:GOTO640
7500 GOSUB2000:REM TRAP
7520 PRINT"**BUNKERED**":GOSUB2500
7530 GOSUB2000
7540 INPUT"WHICH CLUB";C:C=INT(C)
7550 IFC>11ANDC<20THEN7590
7560 PRINT"YOU WON'T GET OUT WITH";
7570 PRINT"THAT":GOSUB2500
7580 GOSUB2000:GOTO7540
7590 INPUT"% AGE SWING";B
7610 M=68+FNA(17)-(19-C)*5-(100-B)*.4
7620 IFF=4THENM=M*.7
7625 IFRND(1)<.4THENM=M/3
7630 IFM>25THENQQ=0:B=1:GOTO810
7635 GOSUB2000
7640 PRINT"YOU FLUFFED IT":GOSUB2500
7650 A=A+1:GOTO7500
9000 REM TREES
9010 GOSUB2000:PRINT"IN THE TREES
9020 PRINT"YOU CAN ONLY HACK OUT SIDEWAYS
9030 TR=0:GOSUB2500:GOTO640
8500 REM WATER
8510 GOSUB2000:PRINT" ** SPLASH !!! **
8520 PRINT"IN THE STREAM-LOST BALL
8530 GOSUB2500:GOSUB2000:GOTO1380
9000 PRINT"PRESS ANY KEY TO CONTINUE
9500 GETA$:IFA$=""THEN9500
9600 RETURN
9900 DATA367,4,445,4,314,4,189,3,520,5
9910 DATA331,4,468,4,375,4,177,3,424,4
9920 DATA562,5,336,4,208,3,447,4,298,4
9930 DATA542,5,385,4,478,4
READY.
```

>The
Dating
Game.

The Electron has added even more strings to its bow.

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You'll find all the programs featured here at your local Acorn stockist. (To find out where that is, simply call 01-200 0200.)

Alternatively, you can send off for the Electron catalogue and order through the post by writing to Acornsoft, c/o Vector Marketing, Denington Estate, Wellingborough, Northants NN8 2RL. Tel: 0933 79300.

GRAPHICS: Graphs & Charts, Creative Graphics, Picture Maker.

BUSINESS: Personal Money Management, Desk Diary.

EDUCATION: Tree of Knowledge, Peeko-Computer, Business Games.

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CHILDREN'S EDUCATIONAL SOFTWARE: Happy Numbers, Timeman One, Timeman Two, Wordhang, Happy Letters, Map Rally.

ACORNSOFT

```
5 REM
HANG GLIDER © Ron Ridge 1984
10 GO SUB 880
20 POKE 23658,8
30 BRIGHT 1: BORDER 7: PAPER
INK 0: CLS
40
50 GO TO 630
60 CLS
70 LET f=0: LET l=0
80 LET f=f+1
90 REM SET UP SCREEN
100 FOR g=0 TO 31: PRINT INK 1;
BRIGHT 1;AT 21,g;"▀": NEXT g
110 PRINT AT 21,19; PAPER 4;"▄▄
120 PRINT INK 3;AT 20,0;"▄▄ ▄▄ ▄
▄▄▄▄ ";AT 18,0;"▄▄ ▄▄";AT 18,11;"+";AT
AT 18,0;"▄▄ ▄▄";AT 16,3;"▄▄▄";AT 15,3;"
17,3;"▄▄▄";AT 16,3;"▄▄▄";AT 15,3;"
▄▄▄"
130 PRINT INK 3;AT 20,28;"▄▄▄";
;AT 19,29;"▄▄▄";AT 18,29;"▄▄▄";A
T 17,29;"▄▄▄";AT 16,31;"▄"
140 LET x=2: LET y=30
150 PRINT INK 3;AT x+1,y;"▄▄";: INK
160 PRINT INK 1;AT x,y;"▄";
2;AT x-1,y;"▄";AT x-1,y+1;"▀"
170 PRINT INK 1;AT 0,3;"FLIGHT
▄▄▄";AT 0,16;"LANDINGS ";l;
▄▄";f;""
180 IF INKEY$="" THEN GO TO 140
190 REM POSITION & FLY BIRDS
200 LET d=INT (RND*12)+3: LET c
=0
210 PRINT AT d,c;"%";AT d,c-1;"
"
220 REM FLY RIGHT TO LEFT
230 PRINT INK 1;AT x,y-1;"▄";;
INK 2;AT x-1,y-1;"▄";AT x,y+1;
";AT x-1,y+1;"
240 REM CHECK BIRD COLLISION
250 IF ATTR (d,c)>120 THEN GO T
O 520
260 LET c=c+1
270 REM DESCENT
280 IF INKEY$="Z" THEN LET x=x+
1: PAUSE 1: PRINT AT x-2,y-1;"
"
290 REM TURN FLYER
300 IF y-2=0 THEN PRINT AT d,c-
1;" ";AT x-1,y-1;" ": GO TO 390
```

```
310 REM CHECK FOR LANDING
320 IF x=21 AND y=19 THEN GO TO
680
330 IF x=21 AND y<>19 THEN GO T
O 620
340 REM CHECK BUILDING HIT
350 IF ATTR (x,y-2)=123 THEN GO
TO 850
360 IF c=30 THEN PRINT AT d,c;"
": GO TO 390
370 LET y=y-1: PAUSE 1: GO TO 2
10
380 REM FLY LEFT TO RIGHT
390 LET d=INT (RND*12)+3: LET c
=30
400 PRINT AT d,c;"%";AT d,c+1;"
"
410 PRINT INK 2;AT x,y;"▄";AT
x,y-1;" ";: INK 1;AT x+1,y;"▄";AT
T x+1,y-1;" "
420 IF ATTR (d,c)>120 THEN GO T
O 560
430 LET c=c-1
440 IF INKEY$="Z" THEN PRINT AT
x,y;" ";: LET x=x+1
450 IF y=28 THEN LET x=x+2;: PRI
NT AT x-2,y;" ";AT d,c+1;" ";
GO TO 200
460 IF x=20 AND y=19 THEN LET x
=x+1: GO TO 680
470 IF x=20 AND y<>19 THEN GO T
O 620
480 IF ATTR (x+1,y+2)=123 THEN
LET y=y+3: GO TO 660
490 IF c=1 THEN PRINT AT d,c;"
": GO TO 200
500 LET y=y+1: PAUSE 1: GO TO 4
00
510 REM BIRD COLLISION
520 FOR e=d TO 19
530 PRINT INK 2;AT d,c-1;"▄";A
T d+1,c-1;" ";: INK 1;"▄";AT d-1,c-1
;" ";: PAUSE 2: BEEP .01,e: LET
d=d+1: BEEP .1,e
540 IF d=20 THEN LET c=c-2;: PRI
NT AT d-1,c+1;" ";AT d,c+2;" ";
AT d,c+1;: FLASH 1;: PAPER 6;: INK
2;"▄": GO TO 600
```

HANG

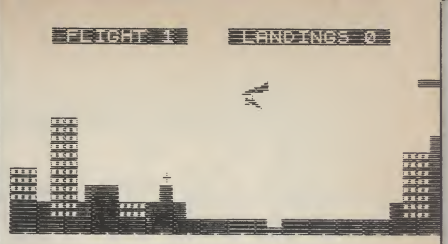
```
550 NEXT e
560 FOR e=d TO 19
570 PRINT INK 2;AT d-1,c;"▄";A
T d,c;: INK 1;"▄";AT d-2,c;" ";
PAUSE 2: BEEP .01,e: LET d=d+1:
BEEP .1,e
580 IF d=20 THEN PRINT AT d-2,c
;" ";AT d-1,c;" ";AT d,c;: FLAS
H 1;: INK 2;: PAPER 6;"▄": GO TO 6
00
590 NEXT e
600 PRINT INK 2;: FLASH 1;AT 5,3
;" YOU HIT A FLOCK OF BIRDS! ";
GO TO 800
610 REM CRASH LANDING
620 PRINT INK 2;: FLASH 1;AT 5,2
;" YOU MISSED THE LANDING PAD ";
AT 7,7;" AND BROKE A LEG "
630 FOR a=30 TO 5 STEP -4: BEEP
.2,a: BEEP .2,-a: NEXT a: BEEP
.7,-10: PAUSE 50: GO TO 720
640 REM HIT BUILDING
650 PRINT AT x,y-1;" ";AT x-1,y-1;" ";AT
K 2;: FLASH 1;"▄";AT 5,1;" YOU CR
ASHED INTO A BUILDING ": GO TO 8
00
660 PRINT AT x+1,y-2;: PAPER 6;
INK 2;: FLASH 1;"▄";AT 5,1;" YOU
CRASHED INTO A BUILDING ": GO TO
800
670 REM SAFE LANDING
680 PRINT INK 1;AT 19,19;" ";AT
20,19;"A";AT x-1,y-1;" ";AT x-2
,y-1;" ";AT x-1,y+1;" ";AT x-2,y
+1;" "
```

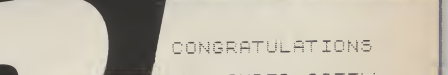
GLIDER

For SPECTRUM By RON RIDGE

Hang gliding in a city centre can be very hazardous to your health! On the way down you can cream into flocks of birds or plough into buildings — nasty. Then, if you miss the green landing spot you can break a leg. All fun stuff.

Use the 'Z' key to control your descent and hit the green spot as many times as you can out of ten. Good luck, and don't break a leg!






```
690 PRINT INK 2;AT 5,8; FLASH 1
" CONGRATULATIONS ";AT 7,7;" YO
U LANDED SAFELY ": LET l=l+1: PR
INT INK 1;AT 0,26; INVERSE 1;
700 BEEP .2,12: BEEP .2,14: BEE
P .2,15: BEEP .2,22: BEEP .2,22;
BEEP .2,15: BEEP .2,14: BEEP .2
,19: BEEP .2,14: BEEP .25,12
710 REM CHECK FOR GAME END
720 IF f<10 THEN PAUSE 100: CLS
: GO TO 80
725 IF f=10 THEN CLS : PRINT AT
8,1;"YOU HAVE COMPLETED 10 FLIG
HTS";AT 12,10;"AND YOU MADE ";AT
14,8;l;" SAFE LANDINGS": LET l=
0: LET f=0
730 PAUSE 100: PRINT #1;" PAUSE 0
KE TO TRY AGAIN (Y/N)": PAUSE 0
740 IF INKE $="" THEN GO TO 720

750 IF INKEY$="Y" THEN CLS : GO
TO 80
760 REM END GAME
770 IF INKEY$="N" THEN CLS : PR
INT AT 9,6;"PERHAPS YOU'RE RIGHT
";AT 11,6;"LUDO IS A SAFER PASTIM
E": STOP
780 IF INKEY$<>"Y" OR INKEY$<>"
N" THEN GO TO 750
790 REM FUNERAL MARCH
800 LET o=PI-PI: LET p=PI/PI: B
EEP .6,o: BEEP .4,o: BEEP .2,o:
BEEP .6,o: BEEP .4,3: BEEP .2,2:
BEEP .4,2: BEEP .2,o: BEEP .4,o
BEEP .2,-p: BEEP .6,o
810 GO TO 720
820 REM INSTRUCTIONS
830 PRINT AT 2,9; INK 1; PAPER
6; FLASH 1;" HANG GLIDING "
840 PRINT AT 5,1;"You stand poi
sed and ready to launch on a f
light down to the green landing
pad below."
850 PRINT AT 9,1;"Key 'Z' will
start your flight and will also
bring you nearer to the ground
."
860 PRINT AT 13,1;"Miss the lan
ding pad and you will be inju
red.Hit a building and you will
be killed.";" Watch out for
the birds,they will bring you
crashing down."
865 PAUSE 100: PRINT #1;" PRESS
ANY KEY TO START GLIDING": PAUS
E 0: GO TO 60
```

```
870 REM SET UP GRAPHICS
880 RESTORE 910 : FOR a=USR "A"
TO USR "T"+7
890 READ user: POKE a,user
900 NEXT a
910 DATA 0,0,0,0,1,15,63,252
920 DATA 0,1,7,31,255,255,248,0
930 DATA 2,50,63,15,59,0,0,0
940 DATA 0,0,0,128,192,224,16,3
2
950 DATA 0,0,0,0,128,240,252,93
960 DATA 0,128,224,248,255,255,
31,0
970 DATA 0,0,0,1,3,7,6,4
980 DATA 64,76,252,240,220,0,0,
0
990 DATA 0,0,0,1,15,111,255,8
1000 DATA 0,0,0,528,224,236,255,
16
1010 DATA 3,17,16,23,27,1,0,0
1020 DATA 104,136,8,232,216,128,
0,0
1030 DATA 240,82,15,7,3,1,52,104
1040 DATA 0,0,192,148,255,254,12
4,56
1050 DATA 48,96,96,96,32,32,32,9
6
1060 DATA 255,153,153,255,255,15
3,153,255
1070 DATA 0,0,0,0,0,0,24,24
1080 DATA 195,60,24,24,24,36,36,
98
1090 DATA 192,32,12,50,16,192,38
,1
```

```
1100 DATA 74,148,126,127,254,124
,48,68
1110 REM TITLE SCREEN
1140 INK 1: PAPER 7: BORDER 0: B
RIGHT 1: CLS
1150 LET Y=4: LET Z=27
1160 LET a$="  H A N G  G L I D E
R "
1170 PRINT INK 4;AT 21,0;"
"
1180 LET A=-20
1190 FOR T=1 TO LEN A$
1200 PRINT INK 1; PAPER 6;AT 5,T
+4;A$(T); PAPER 7; INK 1;AT 5,T+
5;" "; INK 2;AT 4,T+4;" "
1210 BEEP .1,A: LET A=A+2
1220 NEXT T
1230 FOR U=1 TO 17
1240 PRINT INK 2;AT Y,Z;" ";AT
Y+1,Z; INK 1;" ";AT Y-1,Z;" "
1250 BEEP .1,U/2
1260 LET Y=Y+1
1270 IF Y=20 THEN PRINT AT Y-1,Z
;" ";AT Y,Z;" ";AT Y,Z; INK 2;
" ";AT Y,Z; FLASH 1;"*"; BEEP .1,1
: PAPER 6: FLASH 1;2: PAUSE 200: RETURN
0: BEEP 1,2
1280 NEXT U
```

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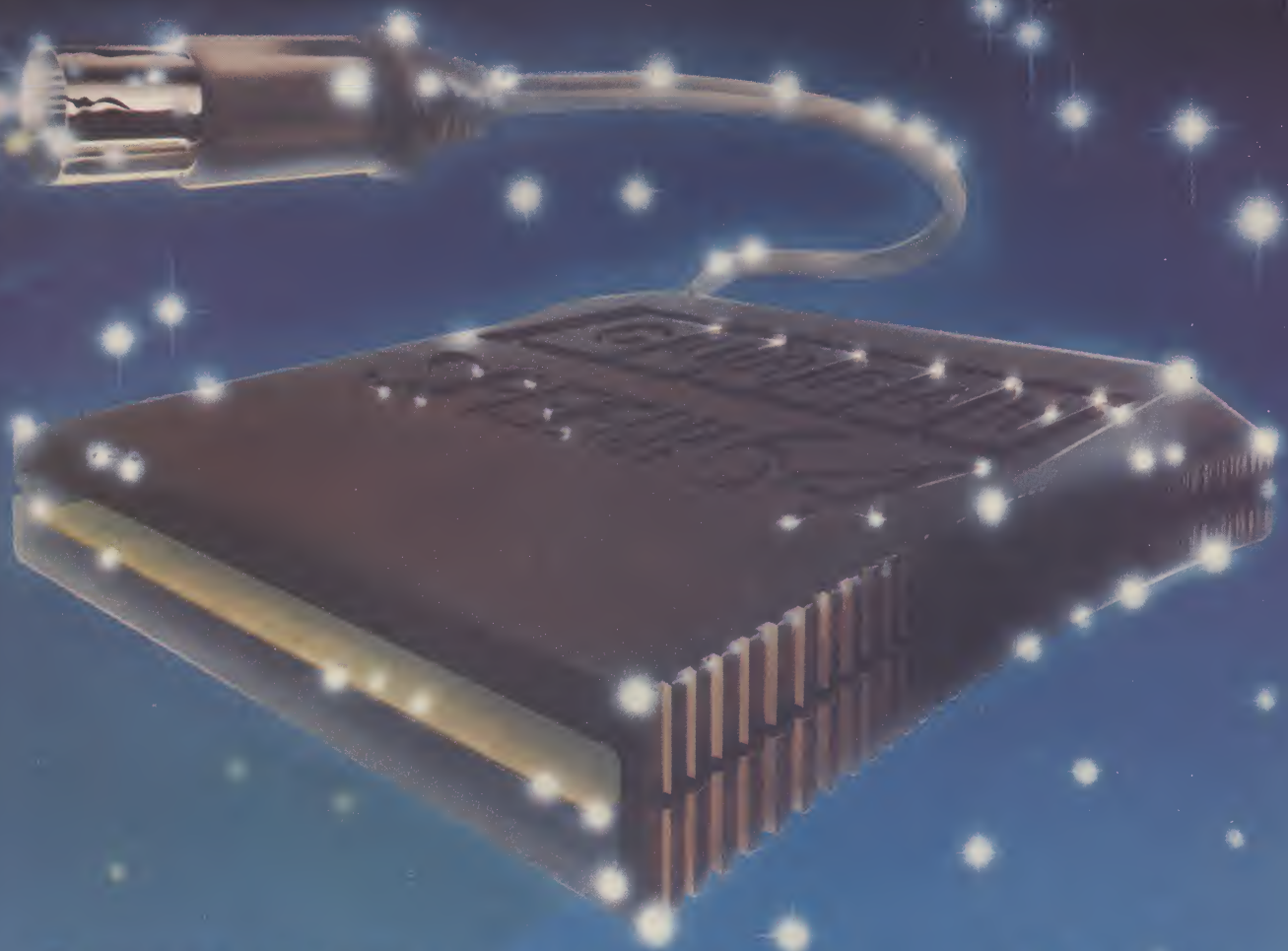

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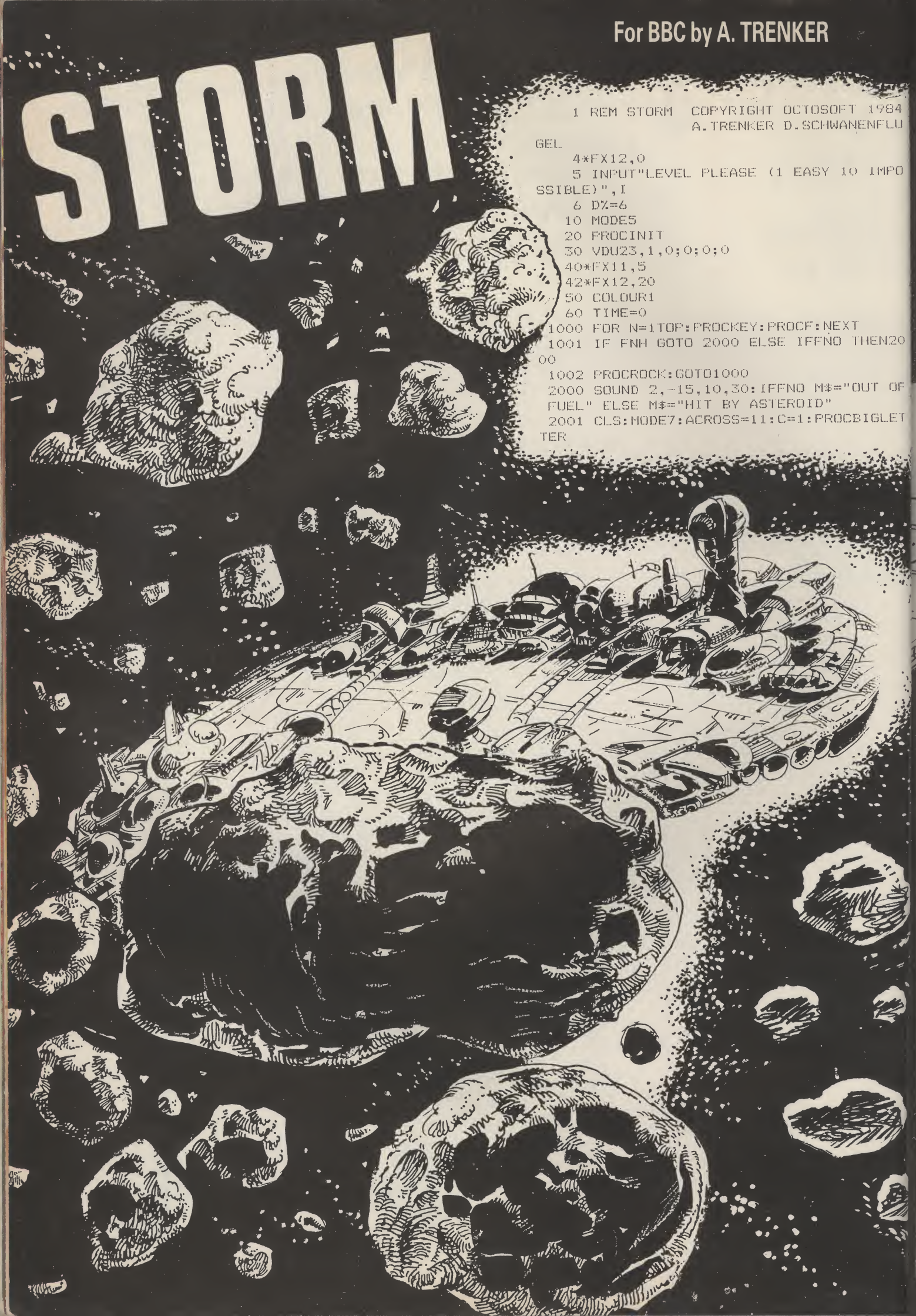
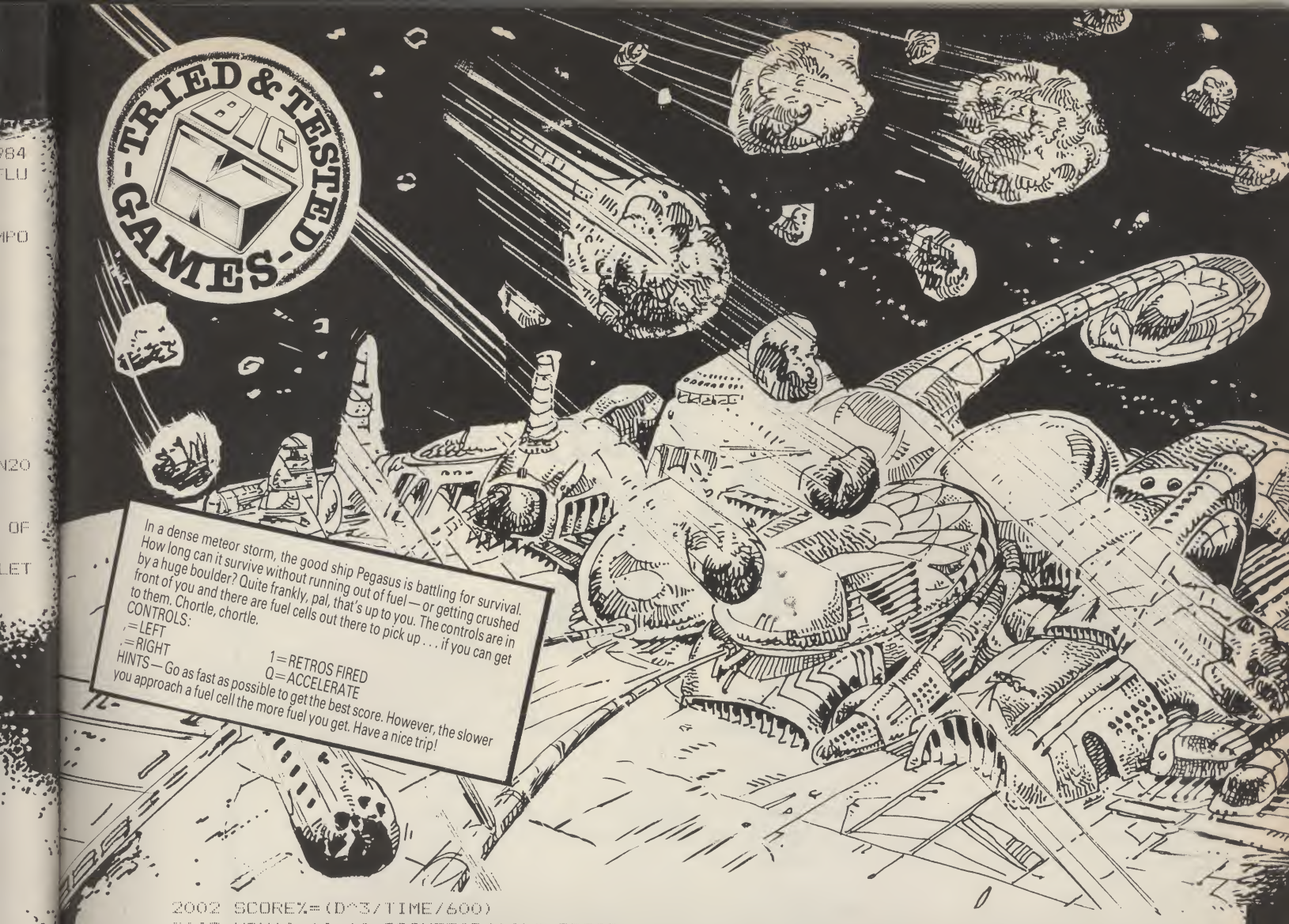
STORM

For BBC by A. TRENKER

```
    1 REM STORM  COPYRIGHT OCTOSOFT 1984
                 A.TRENKER D.SCHWANENFLU
GEL
    4*FX12,0
    5 INPUT"LEVEL PLEASE (1 EASY 10 IMPO
SSIBLE)",I
    6 D%=6
   10 MODE5
   20 PROCINIT
   30 VDU23,1,0;0;0;0
   40*FX11,5
   42*FX12,20
   50 COLOUR1
   60 TIME=0
 1000 FOR N=1TOP:PROCKEY:PROCF:NEXT
 1001 IF FNH GOTO 2000 ELSE IFFNO THEN20
00
 1002 PROCROCK:GOTO1000
 2000 SOUND 2,-15,10,30:IFFNO M$="OUT OF
 FUEL" ELSE M$="HIT BY ASTEROID"
 2001 CLS:MODE7:ACROSS=11:C=1:PROCBIGLET
TER
```





In a dense meteor storm, the good ship Pegasus is battling for survival. How long can it survive without running out of fuel — or getting crushed by a huge boulder? Quite frankly, pal, that's up to you. The controls are in front of you and there are fuel cells out there to pick up . . . if you can get to them. Chortle, chortle.

CONTROLS:

,=LEFT
.=RIGHT
1=RETROS FIRED
Q=ACCELERATE

HINTS— Go as fast as possible to get the best score. However, the slower you approach a fuel cell the more fuel you get. Have a nice trip!

```
 2002 SCORE%=(D^3/TIME/600)
 2003 VDU10,10,10:PRINTTAB(14)" SCORE=";
SCORE%:VDU10,10:*FX12,0
 2004 FOR T=1TO255STEP30:SOUND1,-14,T,2:
NEXT:*FX15,1
 2005 M$="ANY KEY TO PLAY AGAIN":C=4:ACR
OSS=7:PROCBIGLETTER:VDU10,10,10:RUN
 9000 DEF PROCINIT
 9013VDU23,230,28,73,93,127,127,93,8,0
 9015VDU23,231,32,120,124,60,127,62,14,2
 9020VDU23,232,59,127,126,60,124,126,60,
14
 9025VDU23,233,0,56,28,62,62,28,8,0
 9026VDU23,234,62,99,111,103,111,111,127
,62
 9027 F%=300
 9029 D=10
 9030 X%=RND(6)+6
 9031 DEFFNR=(RND(1)<I/10*(D/999))
 9033 DEFFNF=(RND(1)<I/500)
 9034 DEFFNO=(F%<0)
 9035 DEFFNH=(POINT(X%*64+32,0%)=2)
 9036 DEFFNG=(POINT(X%*64+32,0%)=3)
 9037ENVELOPE1,0,2,-2,2,6,12,6,127,0,0,-
127,126,0
 9038 DEFFNLF=(F%<30ANDF%>27)
 9039 VDU23,1,0;0;0;0
 9040P=5:D%=780
 9090ENDPROC
 9100DEF PROCKEY
 9103 IF FNG SOUND 1,2,40,5:F%=F%+10
 9104 IFFNLF SOUND1,1,30,30 :F%=F%-4
 9105 PRINTTAB(X%,D%-1)CHR$(32)
 9110A=INKEY(1)
 9115IFA=44 THEN IF X%>1 THEN PRINTTAB(X
%,D%)CHR$32:X%=X%-1:PRINTTAB(X%,D%)CHR$2
30:F%=F%-1
 9120IFA=46 THEN IF X%<19 THEN PRINTTAB(
X%,D%)CHR$32:X%=X%+1:PRINTTAB(X%,D%)CHR$
230:F%=F%-1
 9125IF A=49 THEN IF P<10 P=P+.6:F%=F%-2

 9126IF A=81 THEN IF P>0 P=P-.5:F%=F%-3
 9130 PRINTTAB(X%,D%)CHR$(230)
 9131 SOUND 1,-10,120-P*10,1:SOUND1,0,0,
0
 9132 PRINTTAB(X%,D%-2)CHR$(32)
 9140 D=D+1
 9190ENDPROC
 9200DEFPROCROCK
 9205 COLOUR2
 9210IF FNR PRINT TAB(RND(19),30)CHR$(RN
D(3)+230) ELSE PRINTTAB(0,30)" "
 9211IF FNR PRINT TAB(RND(19),30)CHR$(RN
D(3)+230)
 9212IF FNR PRINT TAB(RND(19),30)CHR$(RN
D(3)+230)
 9213IF FNR PRINT TAB(RND(19),30)CHR$(RN
D(3)+230)
 9214IF FNR PRINT TAB(RND(19),30)CHR$(RN
D(3)+230)
 9215 COLOUR1
 9218 IF FNF COLOUR3:PRINTTAB(RND(19),30
)CHR$(234)
 9219 COLOUR1
 9220VDU10
 9221 PRINTTAB(X%,D%-1)CHR$(32)
 9290ENDPROC
 9600 DEFPROCBIGLETTER
 9601 PRINTCHR$(128+C);
 9602 PRINTTAB(ACROSS)CHR$(141);M$:PRINT
CHR$(128+C);:PRINTTAB(ACROSS)CHR$(141);M
$
 9605 ENDPROC
 9700 DEFPROCF
 9705 PRINTTAB(0,0);"FUEL "F%;"  TIME ";
INT(TIME/100);" "
 9710ENDPROC
```

Can it be those Invaders you are thrashing at 3.00am are the same ones you were belting at 7.00pm? You need an alarm clock like this useful time-tracking BBC utility from KIM ALDIS...

THE FIRST LAW of computing tells you real world time and key-bashing time are not the same thing. Doing a Fred Astaire on the keys for a subjective thirty seconds can turn out to be (have been?) three weeks when you look up at the clock on the wall.

The Alarm Clock is one way of combating the alarming way in which time passes when hammering the keys. It's an interrupt driven routine (more of that later) and it works with any BASIC program. Arcade games might cause a bit of a problem as it stands but if you trim it down a bit and shove it somewhere it won't get in the way you should be in business.

In this listing the code is assembled in the user defined character area from &C00 but this can be changed by altering the value of the variable 'code'. Other possible areas are given later.

Modes

There is a slight problem — it only displays the time in mode 7. This is because it pokes directly into screen memory. For the benefit of the joker out there who's raising his eyebrows and saying what the hell use is that, there's good reason. The alternative method of getting the time on the screen is to save the current text cursor position, move it to the top of the screen, print the time and then move it back to its original position. All very nice and hunky dory except for one small point. If you're editing a BASIC program there are two cursors. One where you're putting text and one where you've moved to with the cursor keys for copying. This makes life complicated when you return from the routine after it's finished printing the time. If you're editing you suddenly find yourself typing in the wrong part of the screen. OK clever boy? Whatever mode you're in the alarm still goes off fit to wake the dead so it's no big deal.

Diversion

So what's an interrupt? While the computer is running your program it's also doing lots of other things in the background: like refreshing memory, scanning the keyboard etc. It looks as though it's doing more than one thing at a time but in fact all the tasks that need to be carried out in the background are copping bits of the CPU's spare time by generating interrupts. If, say, the keyboard wants some attention it gives the CPU the electronic equivalent of a tap on the shoulder and utters the immortal words, 'Over 'ere John'. The CPU tidies up its current task and then diverts its attention to whatever has interrupted it. When it finishes it carries on with what it was doing in the first place.

Eventful

The thing about interrupts on the BBC is that they're a piece of cake to get at. Under certain conditions something called an Event is generated which can be made to cause an interrupt (when events are 'enabled'). A list of events is given for all to see on Page 425 of the Acorn Bible. For an alarm clock it seems sensible to use the 'interval timer crossing zero' event. Set the timer to minus one, it counts up and when it crosses zero it generates an event. All we need is to write a routine which increments a counter in memory, displays the counter in terms of hours and minutes and reset the timer to minus one so the whole process can then start all over again.

Breakdown

The nice thing about an interrupt driven routine is it carries on even when you junk the program that caused it and run a new one. So now you know. Big Brother Clive and the Quantum Lunch-pail aren't the inventors of multi-tasking.

Just by way of added value the routine includes a little-known way of disabling the Break key! When Break is pressed the operating system looks at location &287 for a JMP instruction. If it's not there it carries on and does its suicide number as per normal. However if there is a JMP it does two jumps to the address held in the next two bytes, firstly with the carry flag clear then, after the system has been reset with the flag set.

The listing is well structured and REMmed so it's fairly easy to follow. Line 150 disables events (if you don't do this then while the code is being assembled then the interrupt only has half a routine to go to. The computer promptly knots its knickers and refuses to talk to you). The registers have to be saved before and restored after the routine is entered in order that the operating doesn't get upset when it goes back to its primary task.

To use the clock just enter the time and alarm at the appropriate prompts. Once set it carries on quite happily whether there's a program running or not. Even pressing BREAK has no effect on it. To change the time or the alarm just reload the program and run it again.

Codes

If you want to use the user defined characters then try altering the value of code to one of the following:

code=&800 . . . sound and printer buffers.

code=&900 . . . cassette output buffer.

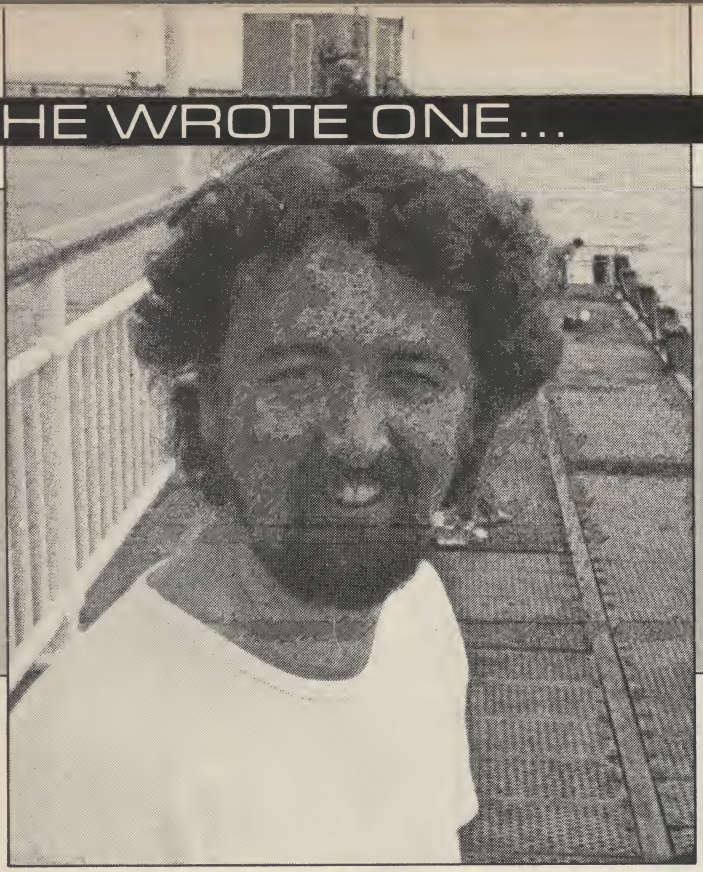
code=&B00 . . . soft key buffer.

code=&D00 . . . if you use discs forget it, if not it's probably the best place for it.

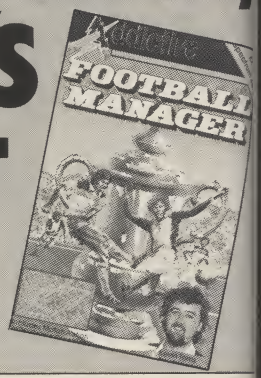
Remember putting things into buffers that aren't meant to be put there can produce strange results. Of course, you could always take the view that as you've paid the the thing you might as well do what you like with it.

Full listing begins opposite. Remember, careful typing and checking is the BIG K key to smooth-running programs.

```
   10 REM" ************************
   20 REM" *      ALARM CLOCK     *
   30 REM" *       (C)  1984      *
   40 REM" *       KIM ALDIS      *
   50 REM" ************************
   60
   70MODE7
   80code=&C00
   90OSWORD=&FFF1:OSWRCH=&FFEE:OSBYTE=&F
FF4
  100screen=&70
  110PROCass
  120PROCsetbreak
  130PROCset_time
  140END
  150DEFPROCass
  160*FX13,5
  170 FOR I%=0 TO 2 STEP 2
  180P%=code
  190COPT I%
  200BCC end
  210.start
  220LDA #clock MOD 256 \Store address
  230STA &220           \of routine
  240LDA #clock DIV 256 \at event vector
  250STA &221
  260LDA #14
  270LDX #5             \re-enable
  280JSR OSBYTE         \events
  290.clock             \save registers
  300PHP
  310PHA
  320TXA
  330PHA
  340TYA
  350PHA
  360\" ....... SAVE REGS
  370JSR write_clock
  380JSR inc_time
  390JSR print_time
  400PLA                \restore
  410TAY                \registers
  420PLA
  430TAX
  440PLA
  450PLP
  460.end
  470RTS
  480.write_clock
  490LDX #clock_paras MOD 256
  500LDY #clock_paras DIV 256
  510LDA #4             \set timer
  520JSR OSWORD         \to -1
  530RTS
  540.inc_time          \update counter
  550SED
  560LDA secs
  570CLC
  580ADC #1
  590STA secs
  600CMP #&60
  610BMI end1
  620LDA #0
  630STA secs
  640LDA mins
  650CLC
  660ADC #1
  670STA mins
  680CMP #&60
  690BNE end1
  700LDA #0
  710STA mins
  720LDA hours
  730CLC
  740ADC #1
  750STA hours
  760CMP #&24
  770BNE end1
  780LDA #0
  790STA hours
  800.end1
  810CLD
  820LDA hours          \check for
  830CMP alhours        \time reached
  840BNE out            \alarm setting
  850LDA mins
  860CMP almins
  870BNE out
  880LDA secs
  890CMP #10
  900BPL out
  910LDY #0
  920.alarm             \sound alarm
  930LDA #7             \and display
  940JSR OSWRCH         \message
  950LDA message,Y
  960JSR OSWRCH
  970INY
  980CMP #&0D
  990BNE alarm
 1000.out
 1010RTS
 1020\" ----------------
 1030.print_time        \update screen
 1040LDA &350           \find top of
 1050STA screen         \screen
 1060LDA &351
 1070STA screen+1
 1080LDY #0
 1090LDA hours          \update screen
 1100JSR print          \display of
 1110LDA #ASC":"        \time
 1120STA (screen),Y
 1130INY
 1140LDA mins
 1150JSR print
 1160LDA #ASC":"
 1170STA (screen),Y
 1180INY
 1190LDA secs
 1200JSR print
 1210LDA #ASC" "
 1220STA (screen),Y
 1230RTS
 1240.print             \convert to
 1250PHA                \decimal for
 1260AND #&F0           \display
 1270CLC
 1280ROR A
 1290ROR A
 1300ROR A
 1310ROR A
 1320CLC
 1330ADC #ASC"0"
 1340STA (screen),Y
 1350INY
 1360PLA
 1370AND #&F
 1380CLC
 1390ADC #ASC"0"
 1400STA (screen),Y
 1410INY
 1420RTS
 1430.hours             \storage area
 1440EQUB 0             \for counters
 1450.mins              \and message
 1460EQUB 0
 1470.secs
 1480EQUB 0
 1490.alhours
 1500EQUB0
 1510.almins
 1520EQUB 0
 1530.message
 1540 EQUS STRING$(20," ")+CHR$&0D
 1550.clock_paras
 1560 EQUD &FFFFFF9C
 1570EQUB&FF
 1580]:NEXT
 1590ENDPROC
 1600DEFPROCset_time
 1610CLS
 1620PRINT''"ENTER TIME"
 1630INPUT"HOURS",hrs$
 1640INPUT"MINS",mns$
 1650hrs$="&"+hrs$:mns$="&"+mns$:hrs%=EV
AL(hrs$):mns%=EVAL(mns$)
 1660?hours=hrs%:?mins=mns%
 1670CALL start
 1680PRINT''"  ALARM"
 1690INPUT"HOURS",alhrs$
 1700INPUT"MINS",almns$
 1710alhrs$="&"+alhrs$:almns$="&"+almns$
:alhrs%=EVAL(alhrs$):almns%=EVAL(almns$)
 1720?alhours=alhrs%:?almins=almns%
 1730PRINT''"Enter Message ";
 1740INPUTmess$
 1750mess$=mess$+CHR$&A
 1760$message=mess$
 1770ENDPROC
 1780DEFPROCsetbreak
 1790?&287=&4C
 1800?&288=code MOD 256
 1810?&289=code DIV 256
 1820ENDPROC
```



FRANKLY, BRIAN, THE GAME'S NOT WHAT IT WAS.



Says KEVIN TOMS, whose *Football Manager* prog has gained cult status. NICKY XIKLUNA blows the whistle . . .

KEVIN TOMS is TALL. It's like interviewing a tree. Except that no mere tree could write a computer game like *Football Manager*.

Football Manager — for the few non-initiates — is a strategy game which involves you in the raw economics of the sport. You decide on the players, bid on the transfer market, shell out wages and balance your economies. As you make your way through the leagues towards t'Cup, you are rewarded with graphical action sequences — "highlights" — from the matches you've played. The outcome, Brian, is not predictable.

Two years ago, in a Milton Keynes basement, the six and a half foot frame of the brain behind the (big) boots was bent in two as he stuck cassette labels onto his first ZX 80 versions of *Football Manager*.

Big Kevin gave up his job as a Cobol programmer, and put all his bytes in one (mail-order) basket bid. Right on cue, Uncle Clive brought out the Spectrum. That night, the ZX 80 waned forever. Big Kev transferred his prodigy to the Spectrum with marathon speed.

Football Manager has been transferred to the Beeb, and more recently to CBM 64. With improved graphics — the mode 7 pin-men have metamorphosed too, into solid flesh thanks to ex-YOPS programmer Peter Lunn. Overall the game has sold some 100,000 copies, the sole commodity that keeps Addictive Games' four personnel employed. Kevin Toms has thereby changed his title from "Chief Label Appender" to "Chief Games Designer".

Big Kev was once Little Kev, and that's when he started creating board games. Later he made calculators play games! He had several attempts at designing a football board game, but found that the necessary simplification ruined any sense of realism. With the advent of the home micro, the scales dropped from his eyes. But even now, 27-year-old Kev continues to think of himself as a games man rather than a computer man.

"All games are pure entertainment. They work through the effect they have on emotions, just like music or a novel. Now that's an entirely different approach to just branching over from programming. What's needed is to bring the experience of an old skill to a new industry. For example, all graphics should have a *use*. They shouldn't just look pretty.

"I don't like making things up. I enjoy working within constraints. The appeal of *Football Manager* lay in the fact that everyone was familiar with the game."

Surprisingly, Brian, Kevin Toms is not an out-and-out football fanatic. Having been sprogged in Paignton, Devon, he supports Torquay, in a lapsed kind of way.

"Football? A terrible shambles. I used to attend matches, but I got put off, along with many others. The managers just had no idea how to organise entertainment. They've never advertised and they can't stop the hooligans."

'Twas in Issue One of this very organ that Arsenal midfield player Charlie Nicholas placed *Football Manager* first in his personal league of computer soccer games, saying: "I'm not even sure that it's a game at all . . . could be useful — to Football Managers!"

Does the author have any ambitions to change art into life, and manage a team some day?

"Nope. I'm happy with what I'm doing. I just want to be the best in my field — that's all!

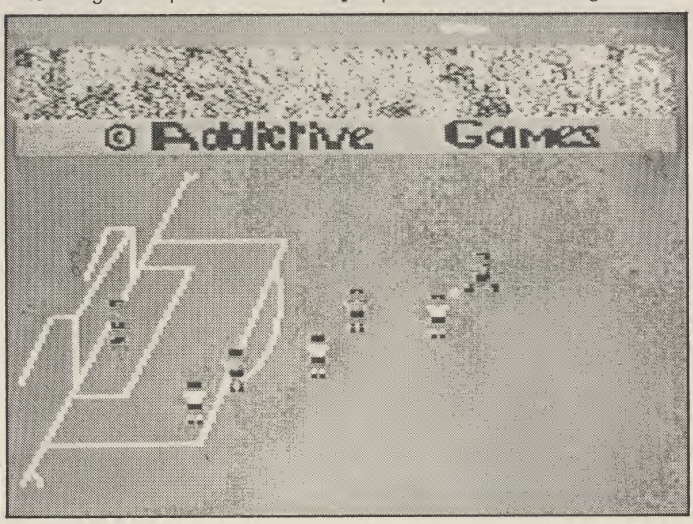
Tom's favourite games are *Buck Rogers in the 21st Century* and *Pole Position*. "My all time favourite is *Twin Kingdom Valley*. I don't play many games."

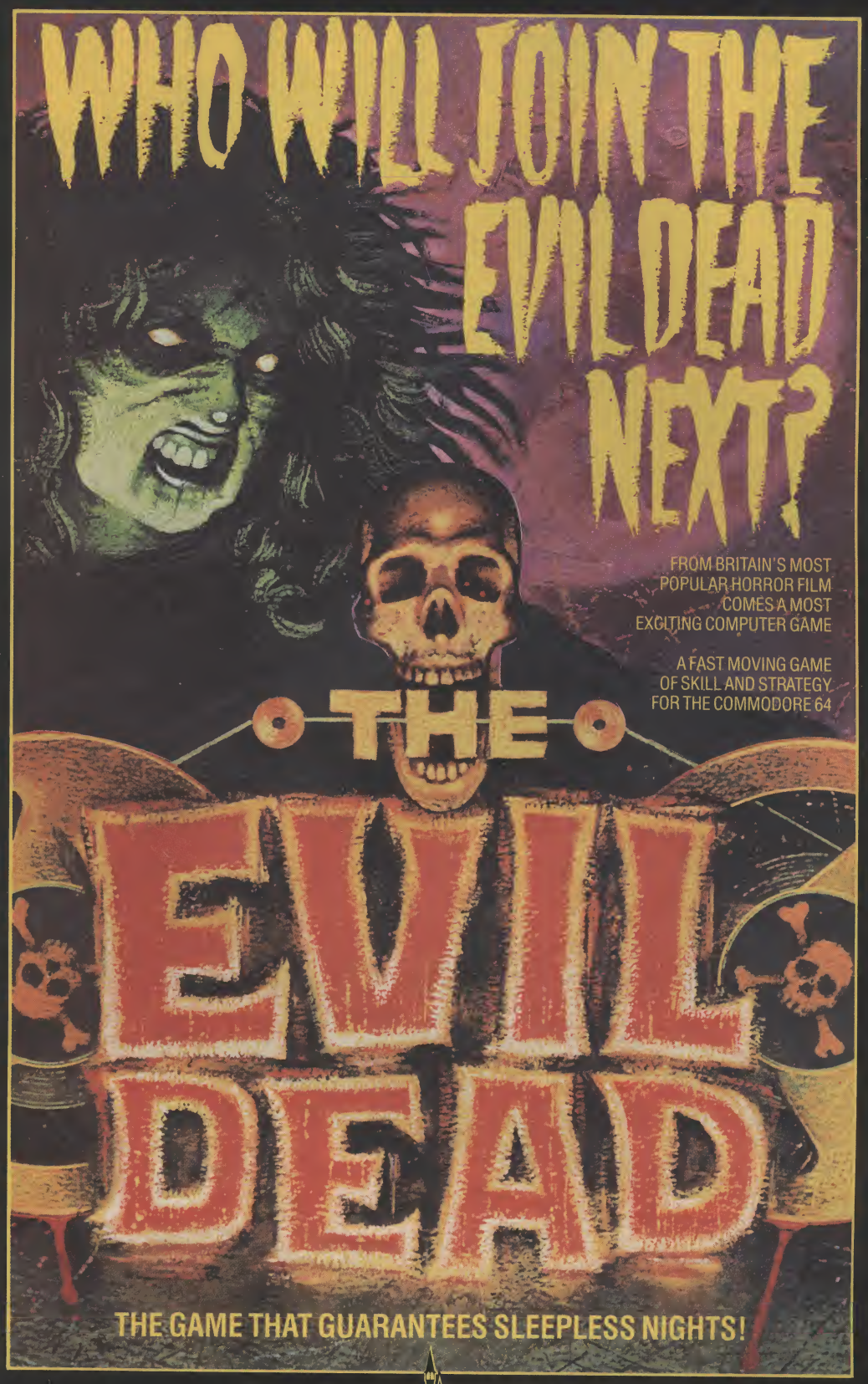
Secondary ambitions? "I'm very keen on getting hold of a good music synthesiser, like Alpha Centuri or an Apple. It's very arrogant, but I want to compose, and believe I can."

He confides that his favourite music is — heavy metal (yeccch!) Yes, this gentle giant gets his head down and knees up to the dulcet strains of Black Sabbath and Rainbow! He admits to having wild day-dreams about rock-stardom.

"I like being recognised. It's nice to get feedback — when people say they like what you've done."

What is it with these programmers? They're all performers! Could the patient detailing of those obedient on-screen sprites hint at a deeper desire for the captivation and control of massive audiences? Or are music and maths inextricably linked in their dark souls? I'll let you know when I've got some more evidence.





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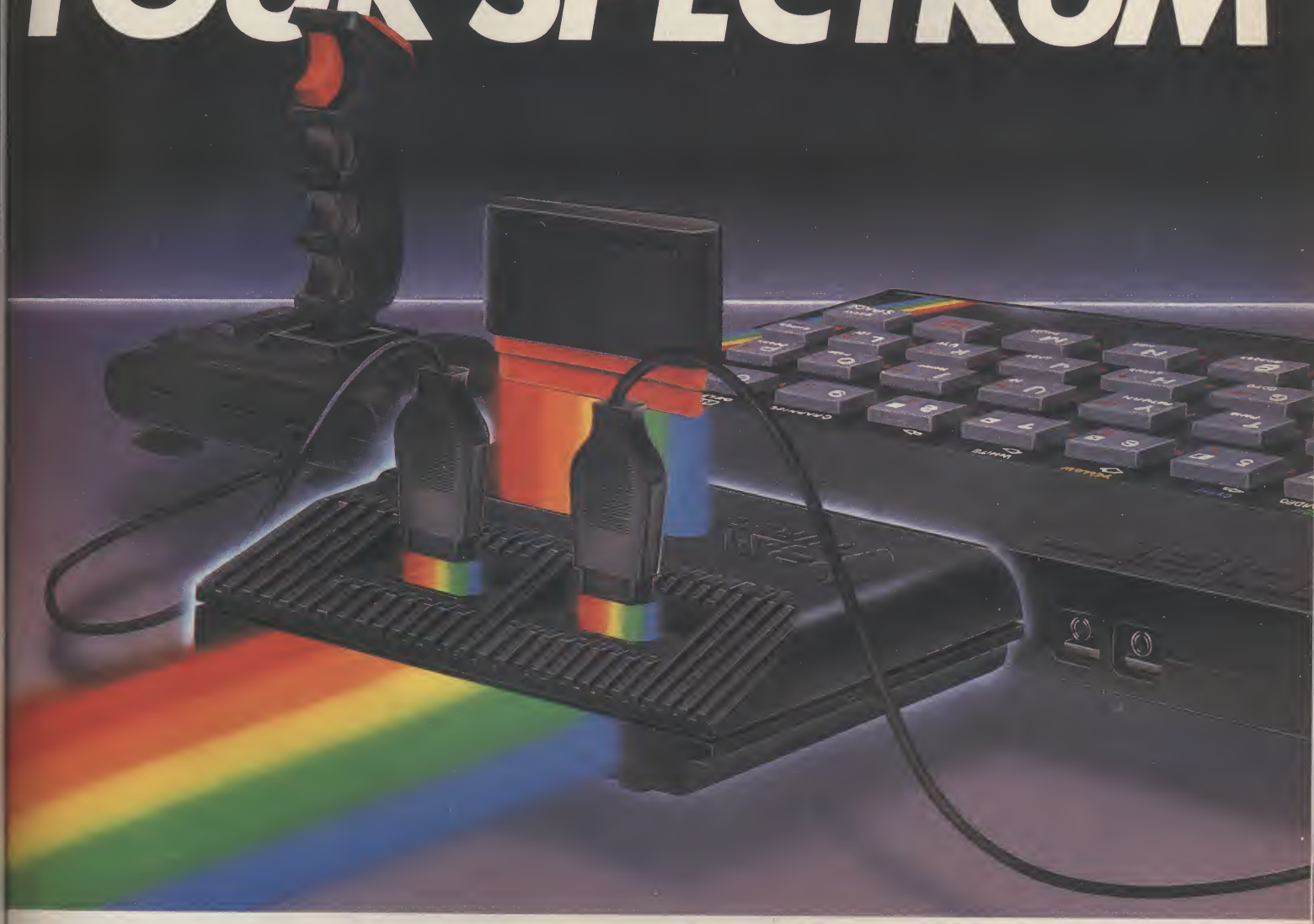

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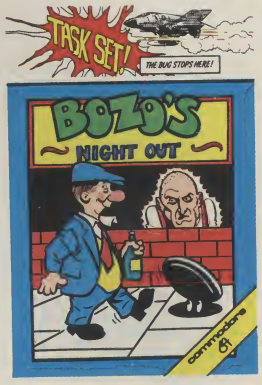

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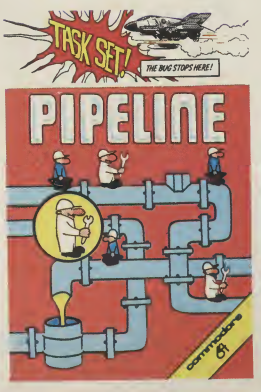

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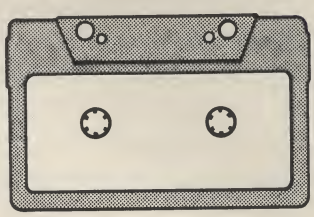

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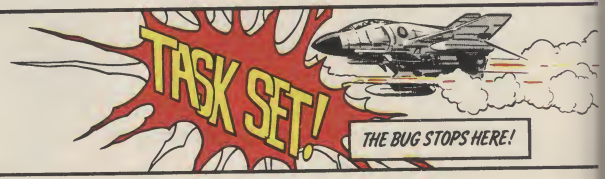

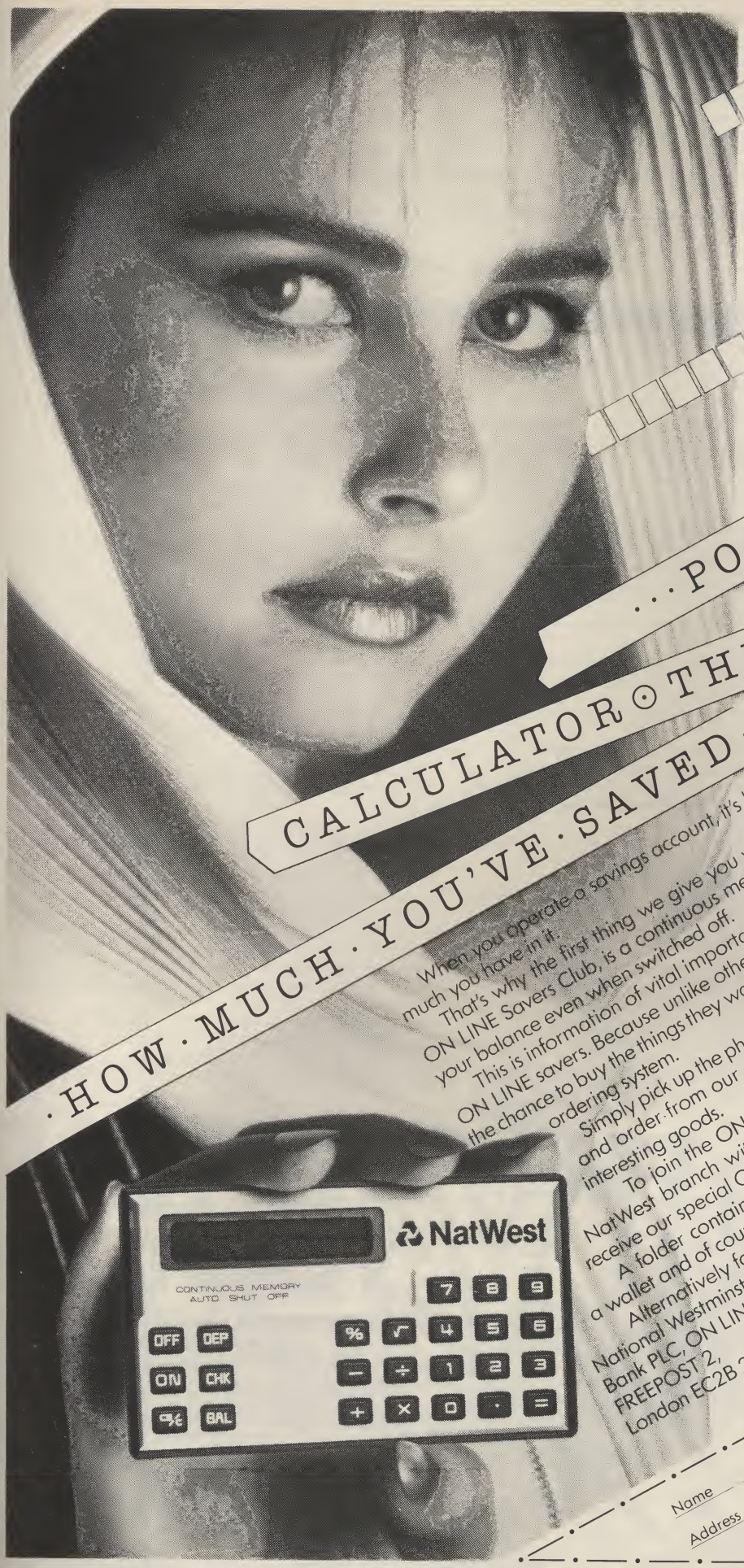

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HERE IT IS folks — the game I promised you in last month's issue. Not only have I used redefined character sets but also Antic mode 4, the multi-coloured mode. There are also a few little extras here to whet your appetite for future instalments.

One useful technique I have incorporated is that of moving players by string manipulation. One of the Atari's stronger characteristics is its string handling capabilities. For those of you who have tried to move players from Basic you know only too well just how slow vertical movement can be. Using strings this program has been written entirely in Basic and the vertical movement of the missile is fairly fast.

The music for this program has not been done by using the SOUND statement. My thanks for help on this must go to a friend of mine called Brian Lee. I am what you might call tone deaf and Brian is a musician. He did the programming for the song 'Messing about on the river' entirely using POKEs.

The general idea of the game is quite simple. You are steering a boat down a stream with boulders in it to block your way. You have to torpedo them to stop yourself from crashing. As the program stands it is very simple and does have one or two quirks. The first is that with careful shooting you can blast your way through the grass verges and create a new river! This should be very easy to program. Alas, I did not have the time, as I was trying to sort out the other problem. Occasionally the boat crashes without hitting a rock! Whoops! Despite my many efforts I still cannot crack that one although as I write this accompanying article I think I know what the problem is. Although this may detract from the game slightly it was only intended as a demonstration. However, if you manage to solve it and let me know I will give a prize of one cartridge game from my own collection to the person who best solves it. So programmers, get cracking.

PROGRAM

The following is a line by line analysis of the program.

10 — DIMension the arrays used.
20 — Start with the title screen and music.
30 to 90 — Set up strings and variables used.
100 to 135 — Set up player missiles.
150 to 190 — Sets up first screen.
200 to 360 — Main program loop.
210 — Works out where to place boulders.
220 — Prints next part of river thus scrolling screen upwards.
230 — Resets RVs.
240 to 252 — Varies position of river on screen.
260 to 280 — Reads joystick and gets ready to position boat.
290 — Checks fire button and torpedoes not already fired.
300 If no torpedo jump firing section.
30 to 330 — Moves missiles.
340 to 360 — Checks for crash of boat.
500 to 540 — Missile hit routine.
2000 to 2060 — Boat crash routine.
3000 to 3050 — Create custom display list.
4000 to 4080 — New character set generation.
5000 to 5280 — Title screen and music.
6000 to 6030 — Game over.

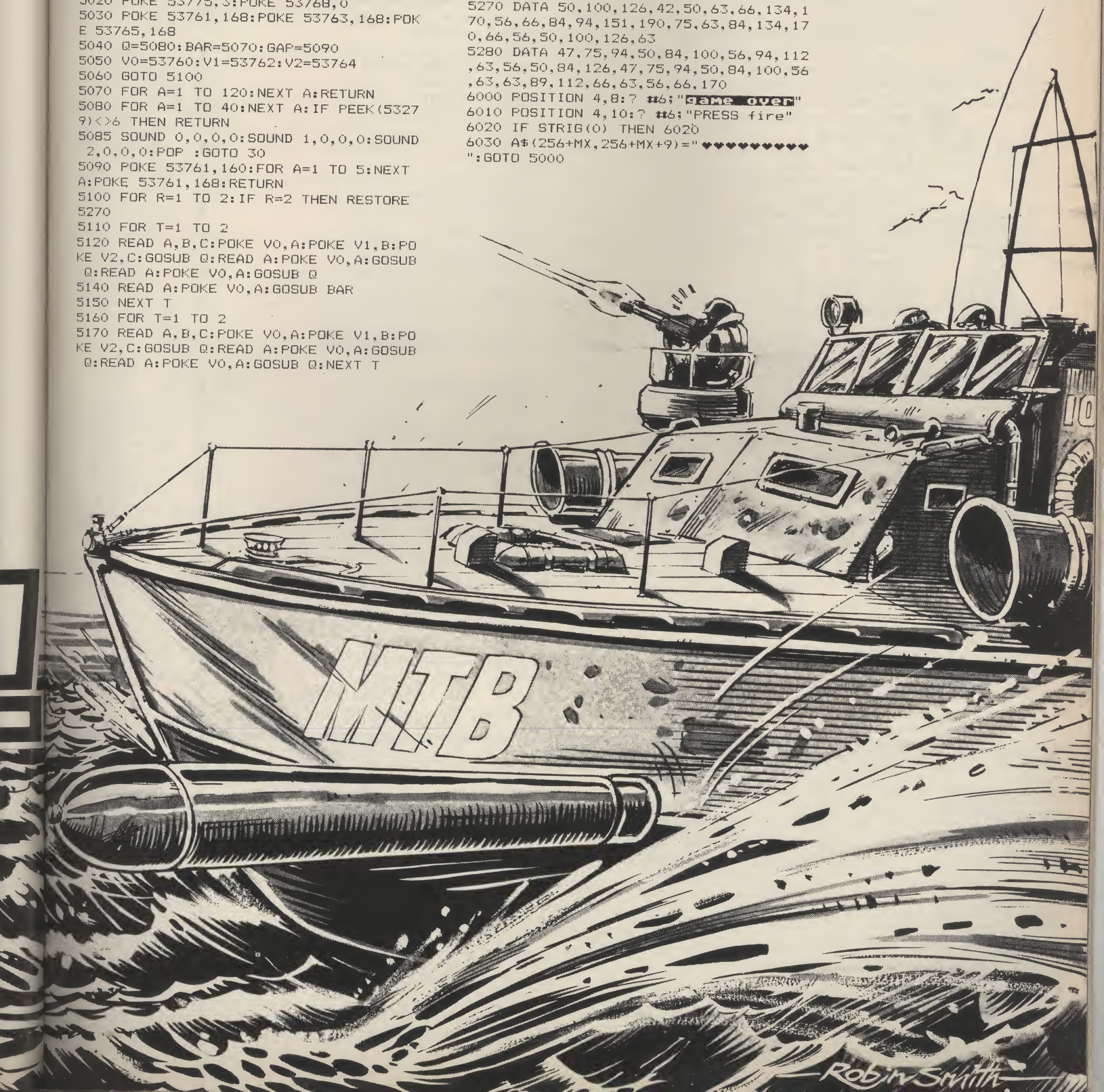
NOTES

```
10 DIM A$(512),BOAT$(20),GRASS$(40),RV
$(12),BULL$(9)
20 GOTO 5000:REM ***MUSIC
30 BOAT$="♥♥<◢◣◢◣◢◣
```

```
L+3,68:POKE DL+28,0
3030 FOR I=6 TO 27:POKE DL+I,4:NEXT I
3040 POKE 559,62:POKE 53277,3
3050 RETURN
4000 CHSET=256*(PEEK(106)-8):RESTORE 4
030
4010 READ A:IF A=-1 THEN RETURN
4020 FOR I=0 TO 7:READ B:POKE CHSET+A*
8+I,B:NEXT I:GOTO 4010
4030 DATA 0,0,0,0,0,0,0,0
4040 DATA 1,255,255,255,255,255,255,25
5,255
4050 DATA 4,85,85,85,85,85,85,85,85
4060 DATA 3,170,170,170,170,170,170,17
0,170
4070 DATA 5,125,255,255,255,255,255,25
5,125
4080 DATA -1
5000 GRAPHICS 18:POSITION 3,1:? #6;"BL
ULPER TROUBLE":POSITION 4,4:? #6;
"by n farrier"
5010 POSITION 5,5:? #6;"MARCH 1984":P
OSITION 4,9:? #6;"PRESS STICK":R
ESTORE 5270
5020 POKE 53775,3:POKE 53768,0
5030 POKE 53761,168:POKE 53763,168:POK
E 53765,168
5040 Q=5080:BAR=5070:GAP=5090
5050 V0=53760:V1=53762:V2=53764
5060 GOTO 5100
5070 FOR A=1 TO 120:NEXT A:RETURN
5080 FOR A=1 TO 40:NEXT A:IF PEEK(5327
9)<>6 THEN RETURN
5085 SOUND 0,0,0,0:SOUND 1,0,0,0:SOUND
 2,0,0,0:POP :GOTO 30
5090 POKE 53761,160:FOR A=1 TO 5:NEXT
A:POKE 53761,168:RETURN
5100 FOR R=1 TO 2:IF R=2 THEN RESTORE
5270
5110 FOR T=1 TO 2
5120 READ A,B,C:POKE V0,A:POKE V1,B:PO
KE V2,C:GOSUB Q:READ A:POKE V0,A:GOSUB
 Q:READ A:POKE V0,A:GOSUB Q
5140 READ A:POKE V0,A:GOSUB BAR
5150 NEXT T
5160 FOR T=1 TO 2
5170 READ A,B,C:POKE V0,A:POKE V1,B:PO
KE V2,C:GOSUB Q:READ A:POKE V0,A:GOSUB
 Q:READ A:POKE V0,A:GOSUB Q:NEXT T
5180 READ A,B,C:POKE V0,A:POKE V1,B:PO
KE V2,C:GOSUB Q:READ A:POKE V0,A:GOSUB
 Q:GOSUB Q:GOSUB BAR:NEXT R
5190 FOR T=1 TO 2
5200 READ A,B,C:POKE V0,A:POKE V1,B:PO
KE V2,C:GOSUB Q:GOSUB GAP:GOSUB Q:GOSU
B GAP:GOSUB Q:NEXT T
5210 READ A,B,C:POKE V0,A:POKE V1,B:PO
KE V2,C:GOSUB Q:READ A:POKE V0,A:GOSUB
 Q:READ A:POKE V0,A:GOSUB Q
5220 READ A,B,C:POKE V0,A:POKE V1,B:PO
KE V2,C:GOSUB BAR
5230 READ A,B,C:POKE V0,A:POKE V1,B:PO
KE V2,C:GOSUB Q:GOSUB GAP:GOSUB Q:GOSU
B GAP:GOSUB Q
5240 READ A,B,C:POKE V0,A:POKE V1,B:PO
KE V2,C:GOSUB Q:READ A:POKE V0,A:GOSUB
 Q:READ A:POKE V0,A:GOSUB Q:GOSUB GAP
5250 READ A,B,C:POKE V0,A:POKE V1,B:PO
KE V2,C:GOSUB Q:READ A:POKE V0,A:GOSUB
 Q:READ A:POKE V0,A:GOSUB Q
5260 READ A,B,C:POKE V0,A:POKE V1,B:PO
KE V2,C:GOSUB BAR:RESTORE 5270:GOTO 51
00
5270 DATA 50,100,126,42,50,63,66,134,1
70,56,66,84,94,151,190,75,63,84,134,17
0,66,56,50,100,126,63
5280 DATA 47,75,94,50,84,100,56,94,112
,63,56,50,84,126,47,75,94,50,84,100,56
,63,63,89,112,66,63,56,66,170
6000 POSITION 4,8:? #6;"game over"
6010 POSITION 4,10:? #6;"PRESS fire"
6020 IF STRIG(0) THEN 6020
6030 A$(256+MX,256+MX+9)="♥♥♥♥♥♥♥♥♥♥
":GOTO 5000
```

by NIGEL FARRIER

for ATARI



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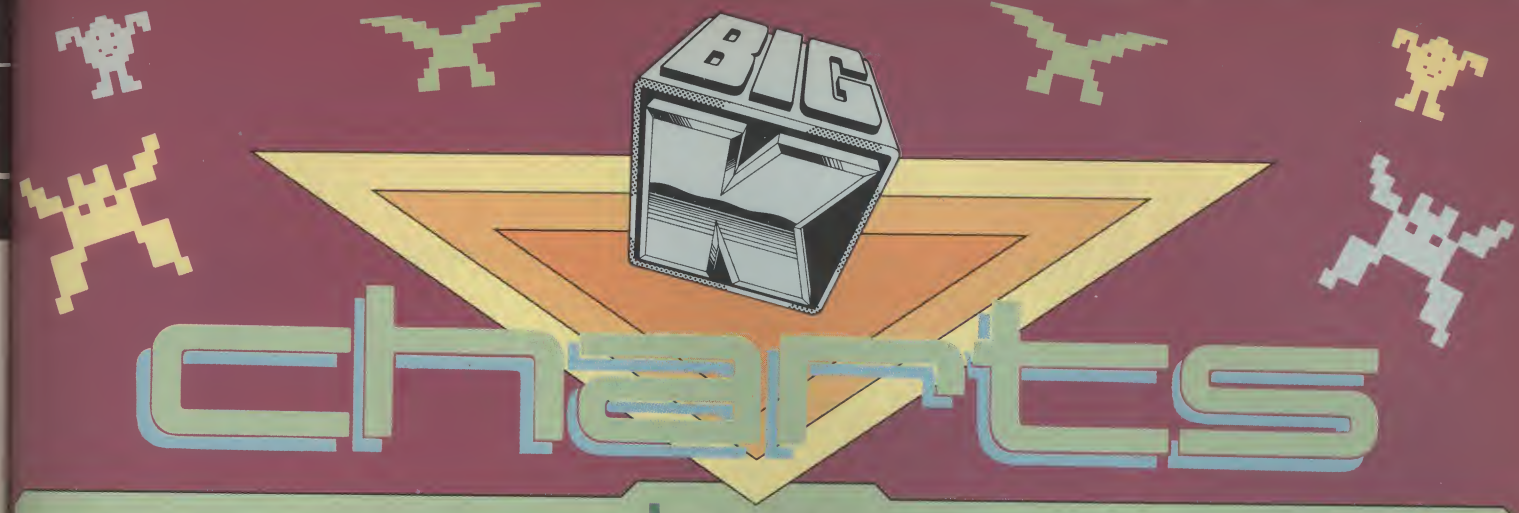

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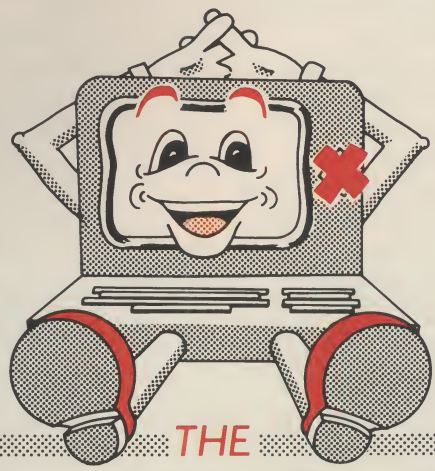

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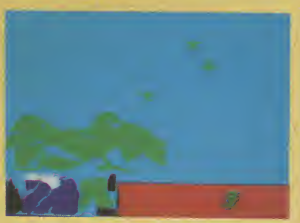

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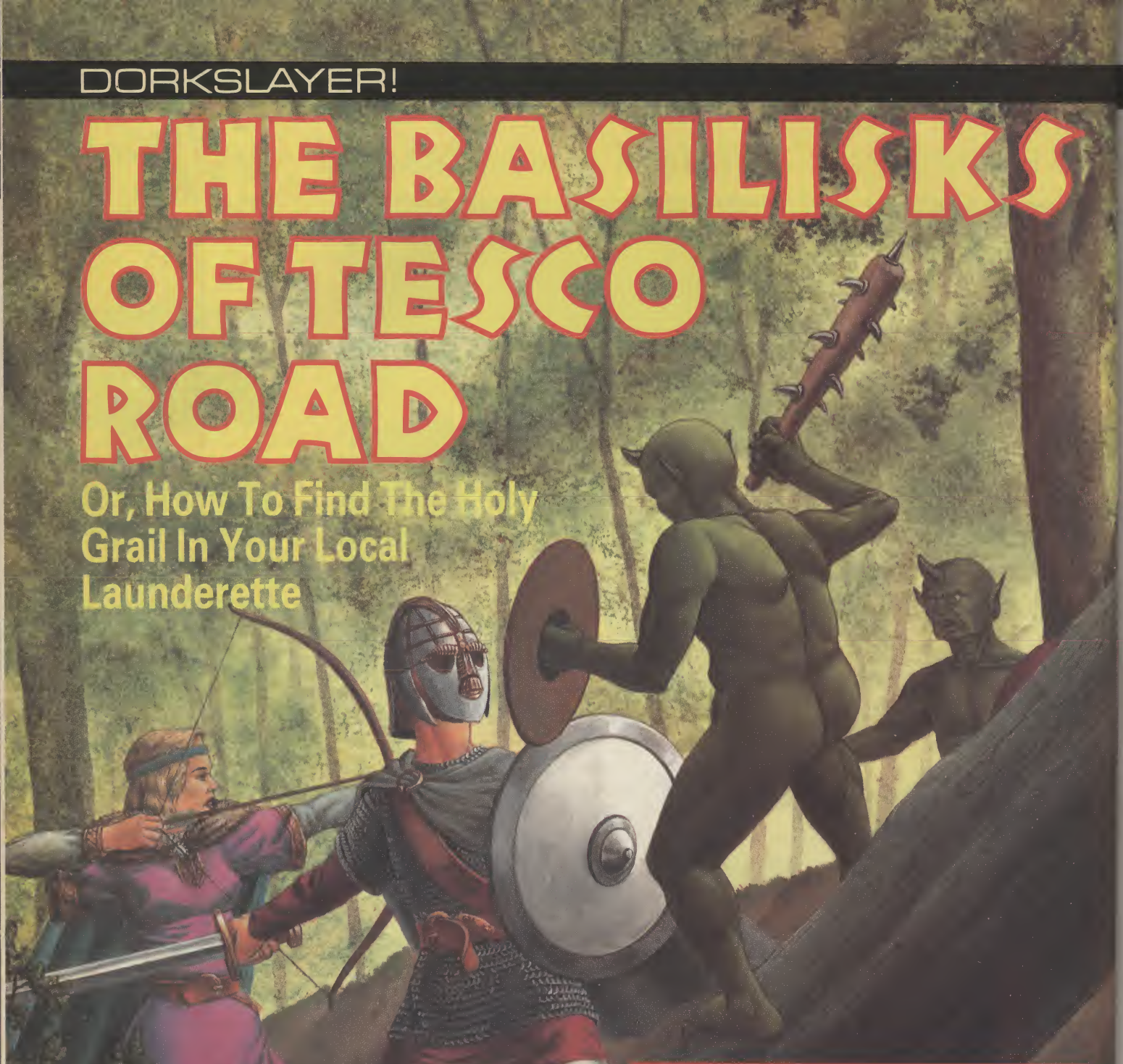
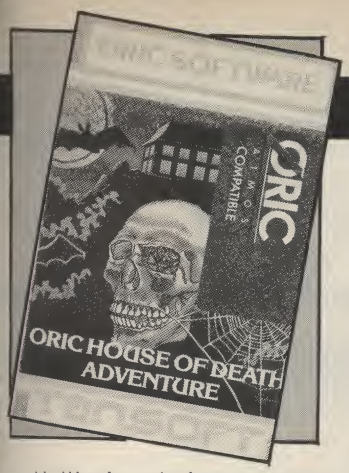


IT WAS with more than the usual relish that I loaded up Salamander's *The Cricklewood Incident* — which runs on the Dragon 32/64. After all it's not often you come across a scenario set barely a bus stop away from your own stomping ground! This attention is well deserved as I've long considered the ravaged wastelands of Cricklewood and Neasden ideal locations for a true blood 'n' thunder adventure. Forget Magra, it's the denizens of Cricklewood Broadway who're really weird!

The object of the game is simple: just venture forth from your padded cell (where else?) and unearth the legendary Holy Grail. Apparently it rests in North West London.

You're given a character option before play starts but how this effects the game I've yet to discover. From a choice of Superman, Geoff Boycott, Genghis Khan, Utter Wally and John Travolta, I chose the latter. This may well have knackered my chances from the outset. I spent most of my time meandering aimlessly in and out of the local hospital.

It must be said here that *Incident* scales new heights of micro realism. While hunched over the keyboard I could actually imagine myself walking the streets of nearby Cricklewood. Within minutes of entering the game I'd been seized by a UFO, savaged by a gaggle of wild Australians and manhandled by an irate



Hell's Angel. An accurate simulation indeed!

The Cricklewood Incident used the standard Salamander formatted text display and enjoys reasonable response times. Along with the usual onscreen bumf there's a health tag (I spent most of the time in an advanced state of despair) and a money box. To successfully complete the adventure you're going to need quite a bit of cash, so try and keep those tills ringing. I invariably left the thing penniless.

A GOOD deal less zany is *The Lords Of Midnight*, a heavy duty phantasy from Beyond Software. It's rapidly amassing a huge army of admirers, and with good reason. Superbly designed and marvellously executed, it's definitely one to impress the cat with. But considering the lack of traditional input procedures, can it truly be classed as an adventure?

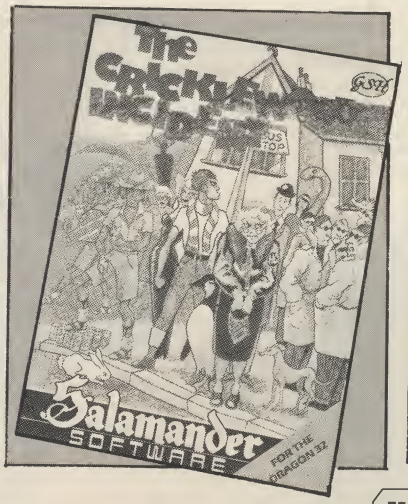
Well yes, I think it can. Having entered the realms of Midnight you can't help but feel a sense of awe and puzzlement. Moving within the game is truly an exploration of the unknown. All are archetypal symptoms of a good adventure. So the format of the thing is pretty irrelevant in my book.

Although it's early days yet, it's worth noting that Doomdark's foul hordes invariably march through the mountains of Ithril and so into the Plains of Blood, so it's clearly possible to avoid his hellish minions and launch an attack on Ushgarak from the rear! (*Kindly re-phrase that, Keaton — **Ed.***) Should you Doomdark devotees discover anything else of note while exploring the land of Midnight, be sure to drop me a line, OK? This one's set to run and run.

While we're dispensing help (of a sort) I must say that I've been deluged with requests for tips on *Valhalla*. Well, my tip is — don't buy it! As a piece of coding it's a marvel, but as a game . . . it sucks. For the same money you could pick up *Africa Gardens* (from Gilsoft) and *Temple of Vran* (from Incentive) and still have a couple of quid left over for some issues of *2000AD*. Much better value.

Oric Atmos owners are currently rather poorly served in the adventure field, so it's perhaps fortunate that some of the early BASIC offerings for the Oric 1 still run quite happily on the new (sic) machine. The most familiar of these is *Zodiac* (and its follow up *House of Death)* from Tansoft. Although heavily criticised for their relative simplicity, I rather like 'em. Both based around old dark houses and involving a quest for hidden treasure, they share a nice line in humour and some high quality scripting. The quote of locations may be meagre but they're finely drawn. A pity they're shamelessly overpriced.

Tansoft are also set to release *The Kilburn Incident* (currently under wraps but obviously along the lines of Salamander's Dragon hit) sometime soon, and Quicksilva have converted Derek Brewster's smashing *Velnor's Lair*, which we looked at some time ago. Both should go someway to placating your hungry Atoms.



A great adventure is...

"A totally original plot; a wide range of interesting locations; new problems to solve and a variety of other characters available for helping or hindering the player. A good Adventure should be written in at least 32K of memory, as anything less is inadequate for storing the vast amounts of data used in the game. A game which is advertised as having "full screen graphics" or "a graphical representation of each location" is not necessarily better than the original text-only Adventures. Graphical Adventures seem to be the "in thing" at the moment, but it is often found that the programmer will sacrifice memory which could be used to make the game more complex, just for drawing a colourful picture on the screen. For me, an Adventure which has excellent verbal descriptions of all locations is just as good — if not better — than one with multi-coloured graphics and sound."

SIMON BIRCHALL

Other contributions welcome.

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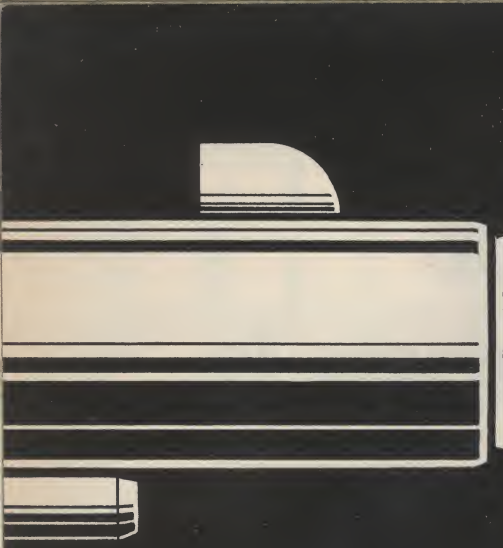

```
1 REM ***************
2 REM * CROSS FIRE *
3 REM * E.MCRACKEN *
4 REM ***************
10 CLR:PRINT"{CLR}{RED}":SC=0:SH=6:MU=2:
GOSUB 2000
12 G1=7903:G2=7918:V=36878:N=36875:CO=30
720:A1=7926:A2=7939
13 FORG=7922TO7925:POKEG,160:POKEG+CO,0:
NEXT
14 FORG=7940TO7943:POKEG,160:POKEG+CO,0:
NEXT
15 POKEG1,66:POKEG1+CO,0:POKEG2,66:POKEG
2+CO,0
16 X=INT(RND(1)*255)+1:POKE37879,X:POKEV
,15
17 IFMU=1THEN GOTO 20
18 GOSUB 1000
20 PRINT"{HOME}GUN 1='Z'"
21 PRINT"{HOME}{CUR DN}GUN 2='X'"
22 PRINT"{HOME}{CUR RT}{CUR RT}{
CUR RT}{CUR RT}{CUR RT}{CUR RT}{
CUR RT}{CUR RT}SCORE"SC:SH=SH-1
23 PRINT"{HOME}{CUR DN}{CUR RT}{CUR RT}{
CUR RT}{CUR RT}{CUR RT}{CUR RT}{
CUR RT}{CUR RT}SHOOTS"SH
:GOSUB 90
24 GETS$:IF S$="Z"THEN M=1
25 IFS$="X"THEN M=2
26 IFSH=0THEN 3000
27 IFM=2THEN POKEN,199:GOTO 40
28 IFM=1THEN POKEN,199:GOTO 30
29 GOTO 24
30 A1=A1+1:POKEA1,64:POKEA1+CO,0:GOTO 50
40 A2=A2-1:POKEA2,64:POKEA2+CO,0
50 IFPEEK(A1+1)=64THENPOKEA1+1,114:GOTO
60
51 IFPEEK(A2-1)=64THENPOKEA2-1,114:GOTO
60
52 POKEN,0:GOTO 24
60 POKEN,0:POKEN+2,190:POKEN,150
61 IFM=2THEN C=A1+23
62 IFM=1THEN C=A2+22
70 POKEC,93:POKEC+CO,2:C=C+22
71 IFPEEK(C)=93THEN C=0:A1=0:A2=0:M=0:GO
TO 1900
73 IFPEEK(C)=48ORPEEK(C)=49 THEN SC=SC+1
0:A1=0:A2=0:M=0:C=0:GOTO 1950
75 IFPEEK(C)=50 THEN SC=SC+2:A1=0:A2=0:M
=0:C=0:GOTO1950
77 IFPEEK(C)=53 THEN SC=SC+5:A1=0:A2=0:M
=0:C=0:GOTO 1950
79 IFPEEK(C)=51ORPEEK(C)=54THEN SC=SC+36
:A1=0:A2=0:C=0:M=0:GOTO1950
80 GOTO 70
90 F=0:F=INT((4-1)*RND(1))+1
91 ON F GOTO 92,93,94,95
92 PRINT"{CUR DN}{CUR DN}{CUR DN}{CUR DN
}{CUR DN}{CUR DN}{CUR DN}{CUR DN}{CUR DN
}{CUR DN}{CUR DN}{CUR DN}{CUR DN}{CUR DN
}{CUR DN}{CUR DN}{CUR DN}{CUR DN}{CUR DN
}{CUR DN}{CUR RT}{CUR RT}{CUR RT}{CUR RT
}{^-}{^-}5{^-}36{^-}10{^-}10{^-}{^-}{HOM
E}":RETURN
93 PRINT"{CUR DN}{CUR DN}{CUR DN}{CUR DN
}{CUR DN}{CUR DN}{CUR DN}{CUR DN}{CUR DN
}{CUR DN}{CUR DN}{CUR DN}{CUR DN}{CUR DN
}{CUR DN}{CUR DN}{CUR DN}{CUR DN}{CUR DN
}{CUR DN}{CUR RT}{CUR RT}{CUR RT}{CUR RT
}{^-}{^-}36{^-}2{^-}2{^-}5{^-}5{^-}{^-}{
HOME}":RETURN
94 PRINT"{CUR DN}{CUR DN}{CUR DN}{CUR DN
}{CUR DN}{CUR DN}{CUR DN}{CUR DN}{CUR DN
}{CUR DN}{CUR DN}{CUR DN}{CUR DN}{CUR DN
}{CUR DN}{CUR DN}{CUR DN}{CUR DN}{CUR DN
}{CUR DN}{CUR RT}{CUR RT}{CUR RT}{CUR RT
}{^-}{^-}10{^-}10{^-}5{^-}10{^-}{^-}{HOM
E}":RETURN
95 PRINT"{CUR DN}{CUR DN}{CUR DN}{CUR DN
}{CUR DN}{CUR DN}{CUR DN}{CUR DN}{CUR DN
}{CUR DN}{CUR DN}{CUR DN}{CUR DN}{CUR DN
}{CUR DN}{CUR DN}{CUR DN}{CUR DN}{CUR DN
}{CUR DN}{CUR RT}{CUR RT}{CUR RT}{CUR RT
}{^-}{^-}10{^-}2{^-}10{^-}36{^-}{^-}{HOM
E}":RETURN
1000 KL=0:PO=0:CM=0:MU=1:FORPO=0TO12:REA
DKL:POKEN,KL:FORCM=1TO100:NEXTCM:NEXTPO
1010 DATA175,183,191,183,191,183,175,183
,191,195,175,175,0
1020 RETURN
1900 POKEN+2,0:FORZX=1TO50:POKEN,170-ZX:
FORE=1TO10:NEXTE:NEXTZX
```

10 5 35 6

SSFIRE

For VIC 20
By E. McRACKEN

It's the old double-gun routine. Shoot from both sides of the screen, where the bullet trails meet a line drops into a high score box. It's a test of skill and reflexes for one or two people.

WARNING: This is a TRANSLATED listing. Instructions in 'wavy' brackets should NOT be typed in but followed, i.e. CUR RT = cursor right.

```
1910 PRINT"{CLR}":GOTO12
1950 POKEN+2,0:FORZX=1TO50:POKEN,120+ZX:
FORE=1TO10:NEXTE:NEXTZX:POKEN,0
1960 PRINT"{CLR}":GOTO 12
2000 PRINT"{HOME}{CUR DN}{CUR DN}{CUR RT
}{CUR RT}{CUR RT}{CUR RT}{CUR RT}{CUR RT
}CROSS FIRE"
2010 PRINT"{CUR RT}{CUR RT}{CUR RT}{CUR
RT}{CUR RT}{*Y}{*Y}{*Y}{*Y}{*Y}{*Y}{*Y}{
*Y}{*Y}{*Y}{*Y}{*Y}{*Y}"
2020 PRINT"{CUR DN}THE OBJECT OF THE GAM
E";
2030 PRINT" IS TO SCORE AS MANY"
2040 PRINT" POINTS AS YOU CAN BY"
2050 PRINT" SHOOTING AT A TARGET"
2060 PRINT" AT THE BOTTOM OF THE"
2070 PRINT" SCREEN. YOU HAVE TWO"
2080 PRINT" GUNS EACH SIDE OF THE";
2090 PRINT" SCREEN ABOVE THE"
2100 PRINT" TARGET AND YOU MUST"
2110 PRINT" FIRE EACH ONE. WHEN"
2120 PRINT" THE SHOTS MEET THAY"
2130 PRINT" WILL MOVE DOWN THE"
2140 PRINT" SCREEN AND HIT THE"
2150 PRINT" TARGET."
2160 PRINT"{RVS ON}{CUR DN}{CUR RT}{CUR
RT}{CUR RT}{CUR RT}{CUR RT}{CUR RT}HIT A
 KEY"
2170 GETW$:IFW$=""THEN 2170
2180 PRINT"{CLR}":RETURN
3000 PRINT"{CLR}{CUR RT}{CUR RT}{CUR RT}
{CUR RT}{RED}{CUR DN}{CUR DN}{CUR DN}{CU
R DN}YOU SCORED";SC
3010 PRINT"{CUR RT}{CUR RT}{CUR DN}{CUR
DN}{CUR DN}{CUR DN}ANOTHER GO?(Y/N)"
3020 GETRS$
3030 IFRS$="Y"THEN GOTO 10
3040 IFRS$="N"THEN PRINT"{CUR DN}{CUR DN
}{CUR RT}THANKS FOR PLAYING.":NEW
3050 GOTO 3020
```

8 9 12 14

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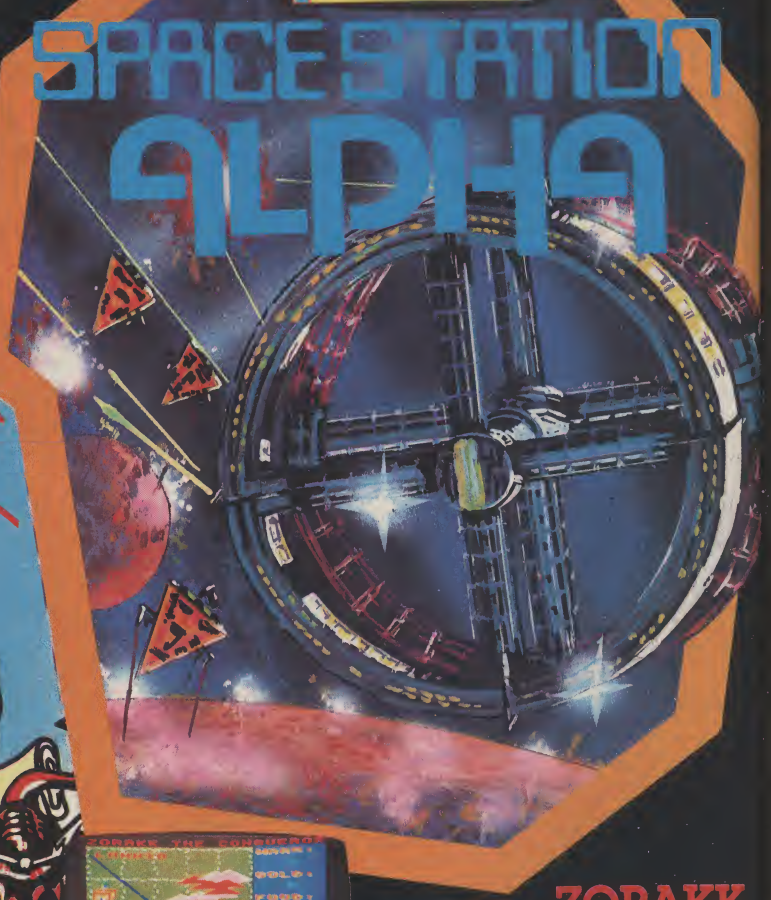

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BIG K GOES BANANAS...

ARTIFICIAL INTELLIGENCE IS COMING TO GET YOU

In five (or ten, or maybe twenty) years the significance of Artificial Intelligence (or Fifth Generation) will have become a lot clearer than it is today. In the meantime, it's nice to ditch the bugs, bytes and sprites for a moment and enjoy a good old speculative waffle about what it MIGHT mean. Your cue, 'Q'...

IS your micro being nasty to you? Do parking meters feel hungry when they're not fed?

Humans like to animize the inanimate. Perhaps this is one of the reasons that Artificial Intelligence holds such a fascination.

How often do you swear at your micro? Really curse the thing? Recently arcade games have been hooked up with hidden microphones to record the ways in which people "relate" to them. Many folk that would otherwise be considered legally sane often talk to machines. Humans become emotionally involved with their own personal technology by giving things names and by talking about (and to) machinery.

We all *really* know the reason the prog just crashed again has little to do with the way your micro feels about you . . . yet nearly all humans animize machines to a greater or lesser extent.

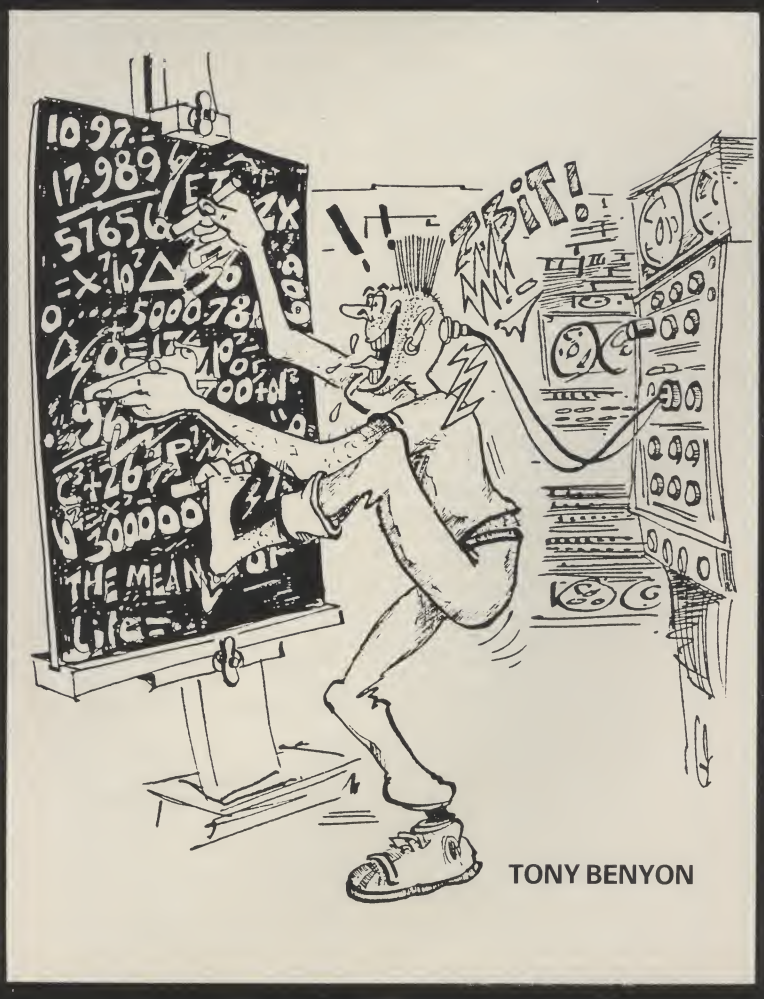
This techno-kinship can have very positive effects — many people given the choice of communicating with a machine or a person, will often prefer the machine, (cash dispensers have queues of people when banks are empty). Recently psychological "Expert" programs (more 'bout them later) have acted as "listeners" to patients' problems. Many of the users found this preferable to talking to humans and a considerable number felt that they responded more honestly to a Interactive Expert Program when answering personal questions about themselves.

Before positively defining what Artificial Intelligence is we have to define intelligence and in particular human intelligence. If a machine is to mimic human behaviour must be analysed in order to structure and devise software and hardware that mimics it. For some tasks this is now relatively easy — but for others it reaches into the realms of paradox, psychology and philosophy 'cos we dunno very much about the way our brains work, end of story. Nevertheless one part of A.I. research is devoted to finding out.

The definition of A.I. is not constant. Once a business program replaces a payroll clerk the definition of A.I. tends to go up (or is it sideways?). Machines and their software systems are the result of human ideas and actions, the transference oif thought into "physical reality"; but often, because they are built by teams, they represent a combination of ideas and these creations lead in an almost truly evolutionary way to more complex machines just as organisms evolved from amino acides (go fetch that biology book). Tracing the evolution of computers is a good case in point. In order to begin to understand human intelligence one has to understand the development of the brain and its friend, pal, or chum, the mind.

Some experts maintain that it will never be possible to construct machines to think like humans because they must be able to "relate" to themselves in the real world, i.e. they would have to possess bodies similar to humans in order to "think" like humans. ("Be" humans?)

What now does seem technically feasible is that the new "intimate technology" will increase the human love affair with machines and that for specific tasks many people will react to machines and their software systems as though they were human and that by studying this phenomenon more will be learnt about the man-machine interface.



TONY BENYON

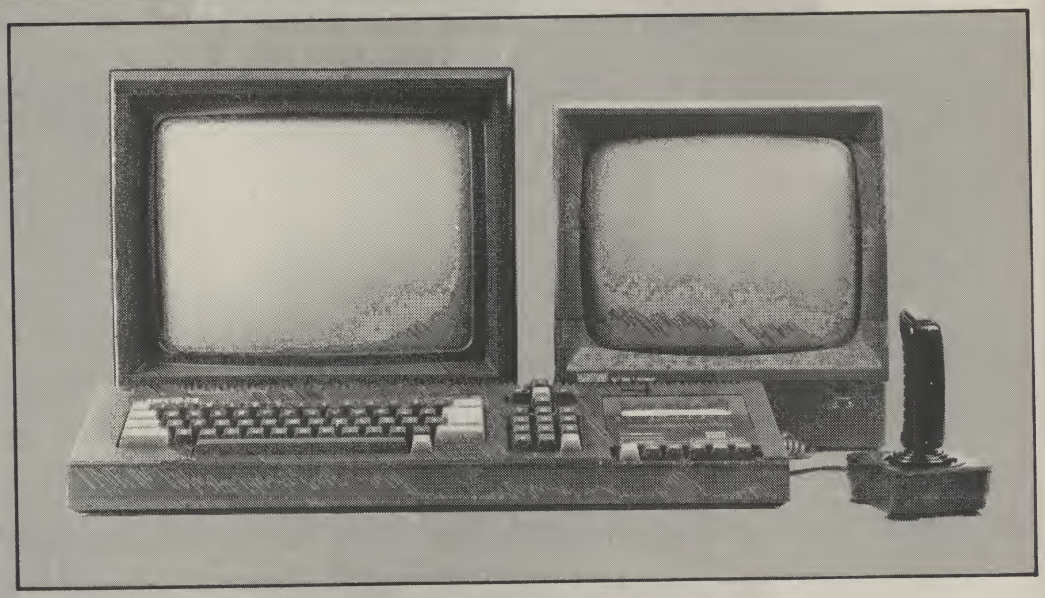
The practical application of A.I. is in the realm of the next generation of more user friendly intimate technology and one way that this is progressing is through the use of Expert Programs.

The whole area of Expert Programs is still in its infancy. These programs interrogate the expert e.g. a hearing specialist, in a particular field and then (provided this has been done with sufficient programming skill) the resultant program and database can be interactive. Most of these Expert Programs have an update facility (sometimes allowing the "nature" of the program to re-program itself) and thus such a system can be used in place of a human expert for certain tasks.

Right now A.I. ideas are being used in inter-active video disc systems which can be used in the training of skills and the merchandising of products which require explanation. Research is also taking place in speech recognition and of course into the whole area of language itself, for words only acquire meaning in a relationship with each other. How the brain extracts "meaning" from words and sentences is still very unclear. This is the area where A.I. research meets paradox in a world that seems bizarre and unreal, the world of philosophy and "quantum reality" where arguments rage about what is "real" and what is not.

NICE...BUT WILL IT AMSTRADDLE THE WORLD LIKE A COLOSSUS?

JOHN CONQUEST has a paws-on session with the Amstrad CPC 464...



BY NOW you must have heard tell of the Amstrad CPC 464 — well, that's the official name but I've not heard it called anything but 'The Amstrad'. The budget hi-fi empire's entry into the home computer field has been much heralded by the press and now that it's in the shops we're getting the bench tests, with the computer mags going into various degrees of ecstasy. The message, which you may have heard before, is that this is the greatest thing since sliced silicon.

The Amstrad is a good machine, no question. But a great one? Not really. It is, however, a great piece of marketing. Designer Richard Perry hit the nail on the head when he said, with admirable honesty and clarity, that his package was designed to compete directly with the Commodore 64, be better value than the Spectrum and cheaper than the BBC B.

INTEGRAL

As a cost accounting exercise it achieves all these targets. For £229 you can get a 64K (42K usable) computer with a built-in cassette player/recorder and loudspeaker, plus a high-res monochrome monitor. For another £100 you can have a colour monitor instead. Clearly Amstrad, learning other companies' expensive lessons, are applying the same minimum component principle that made them such a power in hi-fi. The integral program recorder, which, incidentally has two loading speeds, 1K baud and the rather chancy 2K baud Speedload, has such obvious advantages that it seems destined to become an industry standard.

Though the manual is average (i.e. better than Commodore's but not as good as Acorn's), the friendly Locomotive Basic leaves Commodore's for dead and is very fast. Other features are exceptionally sharp colours (though the claimed 27 are actually 9 with bright and pastel modes, feeble compared to Atari's 256), stereo sound via the hi-fi hook-up (extra), real-time interrupts and windows. Amstrad's £14.95 joystick is a horror, but although the single port will take any D-pin joystick, only Amstrad's will let you use two, the second plugged into the first.

The keyboard isn't as good as the Commodore's, let alone Atari's, but the initial cramped feeling would probably fade with practice. A rather feeble space bar has the Control key right next to it, which seems risky, but there's a whacking great Entry key and a separate numeric keypad.

For a new machine there's already a fair amount of software, with more coming. However, some independent software houses are expressing open concern over Amstrad's distribution policy. According to leading software company Virgin Games, Amstrad prefer that all commercial programs are regulated through Amsoft, its own software house. Independents can 'go it alone' but risk incurring the 'disapproval' of Amstrad. Virgin say that this is in complete contrast to the MSX companies who are extremely forthcoming with help and assistance so creating a better atmosphere for software production.

CO-OP

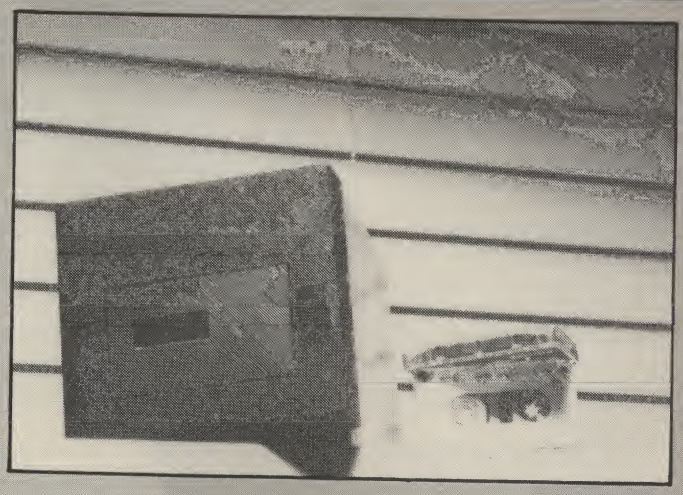
Level 9, the adventure gamers, however, have reported good co-operation from Amstrad so it appears that reaction to the new machine amongst software houses can be best described as 'mixed'. But, on the practical side, with the Amstrad's very similar Z80 engine room, Spectrum software should be very easy to convert. The present trickle could become a flood.

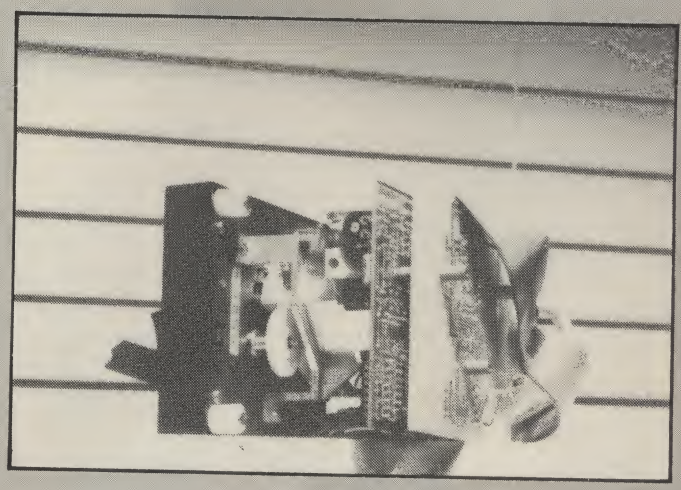
TV vs. MONITOR

My quarrel with Amstrad is the monitors, which are modified and stripped down Amstrad tellies, and not the best in the world. As monitors they're adequate, but with at least one company, Normende, making TVs that are just as good as most monitors and will let you watch Hill Street Blues as well, I can't see the point of spending money, and cluttering up my life, with yet another gadget. I'd rather the £30 modulator and power supply unit that lets you run the Amstrad through an ordinary TV.

The Amstrad has definitely jumped into the charts with a bullet and the prices and specs make it undeniably attractive. Right now I wouldn't care to be Sales Manager for 64s, Spectrums, Electrons or Ataris, let alone any of the second division machines. But I can't help feeling that it's flavour of the month. With the Elan Enterprise, not to mention the MSX machines on the horizon, the hubbub will soon die down and instead of trying to look like a world beater, the Amstrad will settle down to appealing to people who want a neat package. Which should assure it of a future.

NEAT...BUT CAN IT DENT THE DISC MARKET?





...While KIM ALDIS gets to grips with the Ikon Ultradrive, a hi-speed minicassette storage system for BBC and Dragon

CASSETTES ARE a pain in the butt, disc drives are expensive everybody knows it. But probably not so many know that there is a solution which makes a debatable compromise — a fast tape drive.

Ikon's Ultradive (for BBC and Dragon) is such a widget; faster than cassettes but slower and less expensive than discs. In fact it's more than just a fast cassette because its operating system has total control over the forward and reverse movement of the tape, enabling it to do a fast search for the file or program it's looking for.

First impressions: it looks smart. Small, cream in colour to match the BBC, a black front to it and extremely small cassettes, about two inches by one. (The young lady who purports to share my life referred to them as 'dinky'.)

SHORT SIDE

Fitting proved to be something of a pain. The EPROM went into the sideways sockets easily enough but I was definitely not happy about the cable connections. A ribbon cable runs to the user port and another to the auxiliary power socket, both on the BBC's underside — both on the short side. Short I said and short I meant. The damn things were so short that the only place to put Ultradrive was on top of the computer, right over the mains transformer and right in front of the monitor. Acorn tend to get upset by people putting things on top of their baby and my own feelings about keeping data storage media near transformers move in much the same direction. I've had trouble with disc drives when they get too close to the monitor for much the same season.

FAST LOAD

Ikon, the manufacturers, had thoughtfully provided a tape of games to demonstrate the speed at which Ultradrive operates. Not good — buried in the midst of this lot were clones (if not actual copies) of Acornsoft's *Snapper*, *Monsters* and Program Power's *Chess*.

So just how fast is it? To a large extent this depends on where the file is on the tape. The easiest way to demonstrate this is with a few timings. Cataloguing the first side of a tape took five seconds. Fast. Turning over to see what was on the other side proved to be a different story — nearly three minutes! This illustrates one of Ultradrive's main problems. Loading is very fast, only 15 seconds for *Monster's* main program to load — after it had taken over a minute to find. This, in itself is still not bad when compared to cassettes but it is possible for Ultradrive to take much longer. The problem lies in the fact that it has to look at the catalogue before it knows where to look on the tape. Consider a worst possible case where the tape is wound fully forward and the program you want to load is also at the end of the tape. Three minutes are spent twiddling thumbs until the catalogue is found, followed by a further three minutes while it goes back to the end of the tape to load. Admittedly this is a worst case but if you think about it it's not that unusual. Supposing you're working on a piece of software. Being a naturally cautious person you save your program at regular intervals in case it decides to do a suicide number. Every time you save it Ultradrive goes to the catalogue, writes the filename and any other garbage it needs then goes to wherever your program is to save it. This process repeats itself every time a load or save is made. Unless you make a point of using a new tape so your program is right next to the catalogue the time saving is very little when compared to cassette.

I definitely didn't like the utilities. One or two of these (REWIND, CAT, SWAP — for swapping loops) are on Ultradrive's ROM. Unfortunately, like the Acorn DFS, the most often used commands, RENAME, DELETE, ACCESS and INFO, are on the utilities tape — slow and inconvenient to get at. To be of any real use they should be accessible from ROM where they can't interfere with anything.

CHEAPER

By way of summary, Ultradrive is reasonably good but it could be better. The main flaw is in the design of the operating system without resident utilities. Those on tape aren't as comprehensive as they should be either; no BACKUP, COPY or COMPACT. But then I already use discs so maybe I'm being over-critical. It's easy to see that Ultradrive is better than cassette (what isn't) and at £79.95 is up to £150 cheaper than discs, once you've forked out for the DFS. It all depends on how short of cash and how long on time you are. In spite of its shortcomings it still works well.

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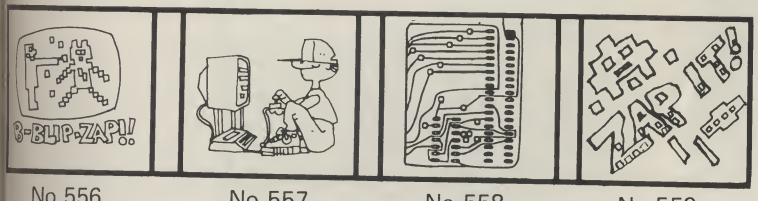

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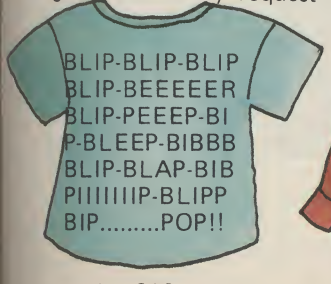

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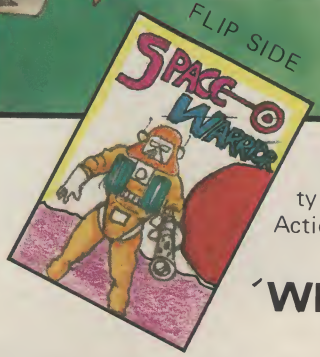

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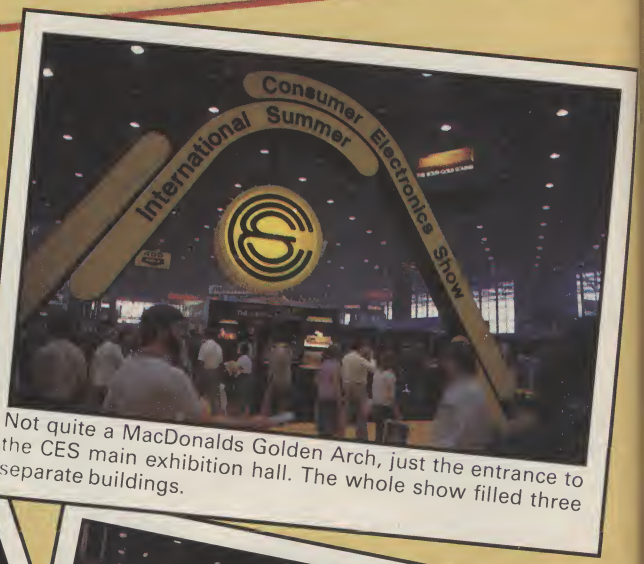
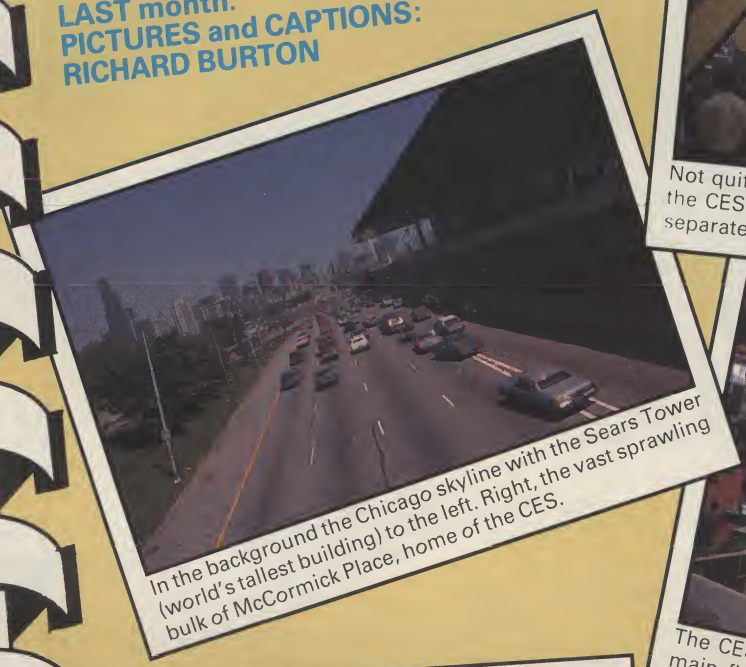
BACK IN THE

For a whole mess of reasons America remains the hub of the computer galaxy. What happens there today may well happen here tomorrow. For this reason we've devoted a few pages to an in-depth look at the U.S. scene: pictures you haven't seen of products you may never see; American computer-games magazines under the microscope; and what must surely be the state of SOME art or other, a comic designed and printed entirely on Apple's amazing MacIntosh micro. So get some pumpkin pie outta the icebox, suck on a Dr Pepper, and get your head down. 'Cos this month BIG K is . . .

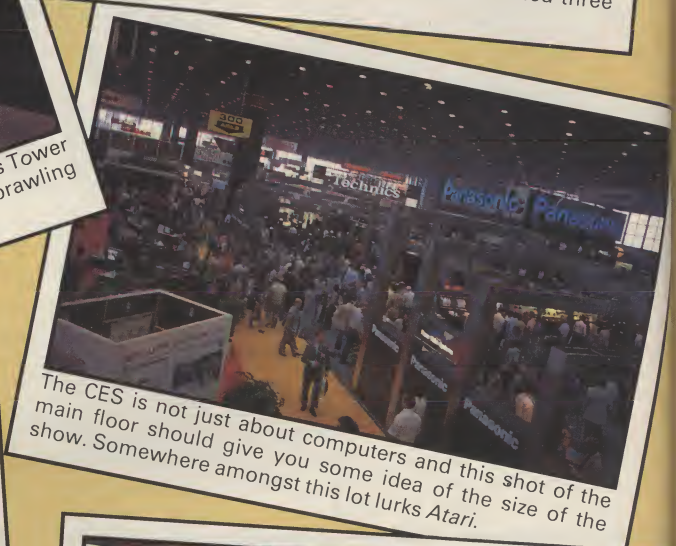
THE VIEW FROM McCORMICK WEST
Last month we reported in haste from the Consumer Electronics Show in Chicago. This month we give you . . . some of the shots and stories we didn't have room (or time) for LAST month.
PICTURES and CAPTIONS: RICHARD BURTON



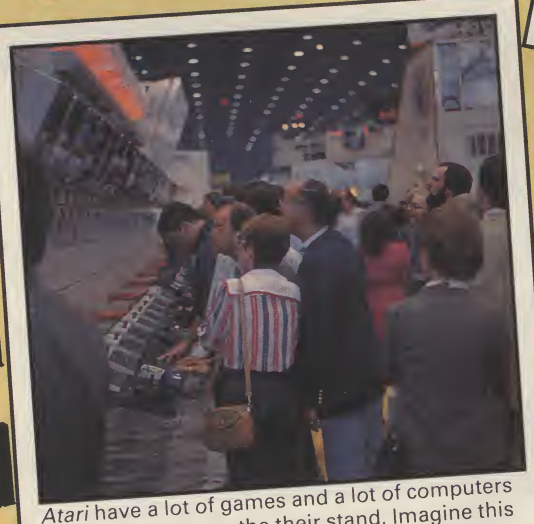
Not quite a MacDonalds Golden Arch, just the entrance to the CES main exhibition hall. The whole show filled three separate buildings.



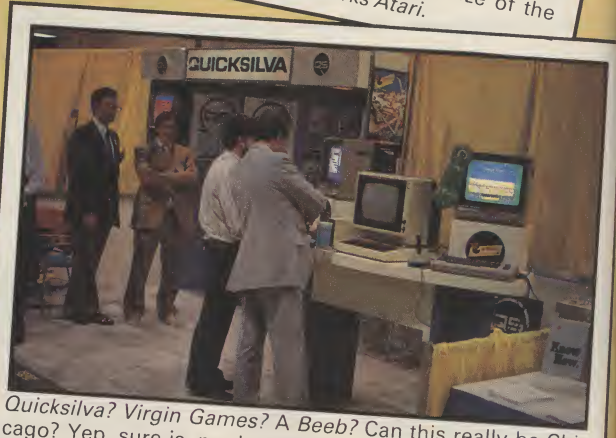
In the background the Chicago skyline with the Sears Tower (world's tallest building) to the left. Right, the vast sprawling bulk of McCormick Place, home of the CES.



The CES is not just about computers and this shot of the main floor should give you some idea of the size of the show. Somewhere amongst this lot lurks *Atari*.



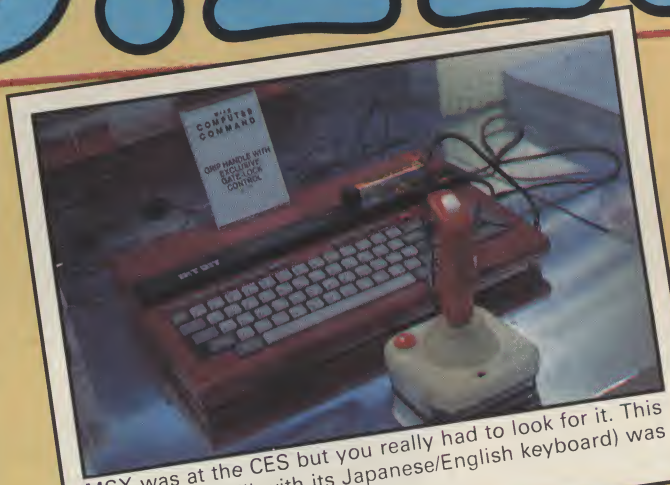
Atari have a lot of games and a lot of computers — most of them on the their stand. Imagine this little set-up in your bedroom!



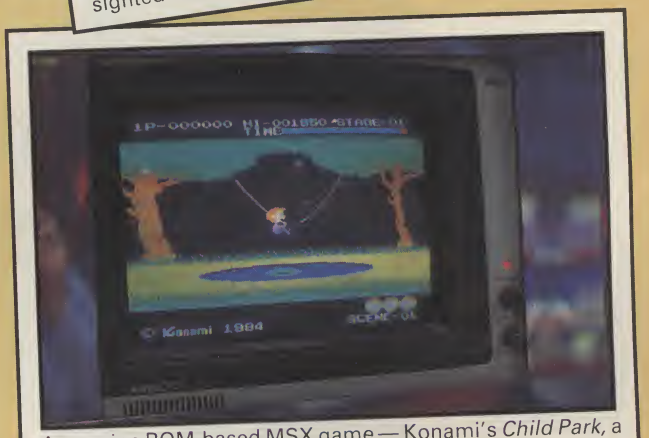
Quicksilva? Virgin Games? A Beeb? Can this really be Chicago? Yep, sure is, pard, and this here's where them Brits try to teach as about video games. Dang nerve!

U.S.A.

You get used to seeing things bigger and (sometimes) better in America, including a giant *Wico* joystick. All suggestions for games that can be played with this joystick to BIG K.



MSX was at the CES but you really had to look for it. This *Sony Hit Bit* (still with its Japanese/English keyboard) was sighted on the *Wico* stand.



A genuine ROM-based MSX game — Konami's *Child Park*, a typically oriental game owing more than a little to Activision's *Pitfall* in places.

This MSX micro — a *National CF2000* — was spotted on the Activision stand running a pre-production version of *Pitfall II*.

Seen for the first time, new add-ons for Coleco's *Adam* computer: A 5¼" disc drive, a second *Digital Data Drive*, a 64K *Memory Expander*, and more. Coleco are heavily backing their much-criticised computer system. Will it work?

CAN 20 MILLION VCS OWNERS BE WRONG?

Not on your life, matey, to judge by the profusion of U.S. computer-game magazines — most of them really video-game mags at heart . . . TONY TYLER peruses a sample of BIG K's transatlantic opposition.

A QUICK glance at the American computer press tells you a lot about the origins of our own version. Like microprocessor technology itself microcomputer magazines originated over There and subsequently appeared over Here, already having acquired a form of recognised identity.

That the model has been US-defined becomes apparent by a quick glance at, say, *Byte*. *Byte*'s obvious editorial aim is to rule the world (which they all but do already, to judge by the thickness of their issues). Their chosen slant is the Authoritative shtick. Clinical, clearly laid-out and above all voluminous, *Byte* sails placidly along on a sea of immense knowledgeability, prestige, and considerable advertising revenue. It is the very model of a modern micro magazine.

Also with a good reputation among magazine buyers in the UK are *Compute!* and *Creative Computing*, both of which take a more relaxed editorial line, aiming generally to the "left" of *Byte* in their (equally calculated) unstuffiness, cheerful layouts, and air of calm, knowing, expert, fair minded, hippie self-confidence.

Although with a few minor exceptions these three are the US computer magazines most highly rated in the UK in fact there are a very great number of other, not too different magazines, many of which never get distributed here. But to say many of them are unlike anything you've seen before would be to overstate matters. There are: business machine magazines; general computing magazines; hand-held personal computer magazines; soft magazines; dedicated-machine magazines; educational titles, and game magazines.

There are a *lot* of game magazines, actually.

As we all have our definition of games magazines let me say I mean magazines who deal with "recreational computing"; any use of a computer or computer-like object to do anything spectacular and involving, *not* already defined as either Business or Educational. Leaving it at that (for now) in the UK, what do we find in the US? Proportionally nearly three times as many games magazines. And for this you can blame the Atari VCS and other videogame machines.

The fact is that, for Americans, the Age of the Computer began with the Atari VCS — later on with the Intellivision, the Odyssey, the Sega and of course the Coleco as well. As a result they underwent an entirely separate stage — the great VCS Diversion. By committing millions of potential one-time buyers to games consoles, the salesmen ensured that the real computer revolution in America would come, for the average American family, at least a year late as a result.

Videogame culture — as a genuine and recognised precursor to full-blown computer culture — began with Atari, lives on — still — with ColecoVision, and in its two years of unchallenged monopoly has spawned several videogame magazines. Examples are *Electronic Games*, *Electronic Fun*, *Joystick* (since defunct), and *Vidiot* (ditto) to name just a few better-known.

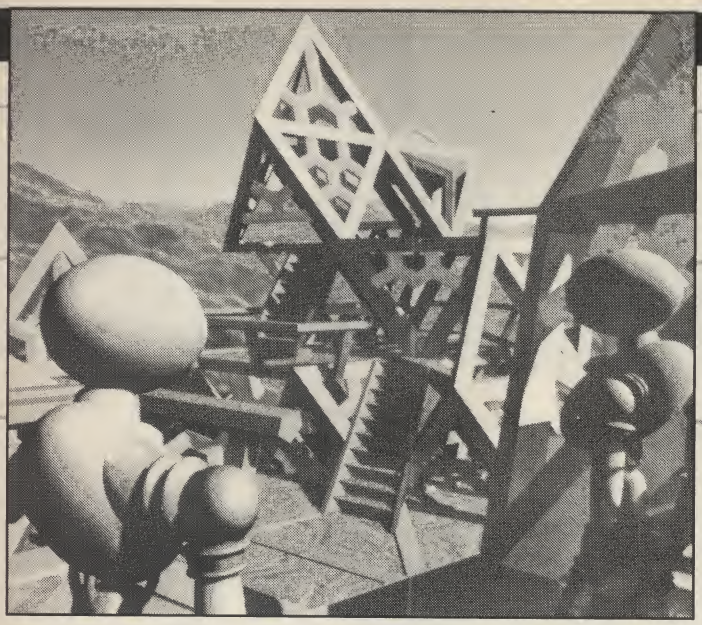
The arrival (willy-nilly) of the US computer revolution has meant that survivors have had to consider becoming keyboard conscious, in mid-stream as it were. *Electronic Games* has for some time now printed short utility programs for the US-favoured computers. But chiefly because they daren't abandon the huge US videogame ownership, even "Junior Computer" mags continue to review and support videogame stuff wholeheartedly. Apart from that a list of their contents would sound familiar enough to British ears: general features; software reviews; some hardware; standalones (big business in the US), and arcades. To this add occasional very short utility programs for the half-dozen most popular computers; equally short games listings; and movie/TV reviews where appropriate. It all sounds recognisable enough stuff. On paper.

But there are differences. American games mags carry far less advertising than their British cousins, in general have less pages and cost a good deal more.

One thing you get for your money is full colour throughout; and I guess they need the money since they all have staffs about three times the size of British magazines. Artwork in these magazines is often (though not always) superb. Above all the flavour is American.

ELECTRONIC GAMES
Monthly; $2.95

The doyen, fatter than ever now since the demise of its chief rival. Original launch diet (videogames, arcades, standalones) still predominates, though computer features have been increased over the last year or so. Specialises in imaginative reviewing — every feature in



EG is almost certain to be a review of some sort — often using artwork to romanticise the limitations of the writing (a little too Gee Whiz in places, gang!) Averages 132 pages per issue, of which (in our sample) 44 were advertisements.

Verdict: The definitive videogamer's magazine. Will take the Pro 7800 seriously.

COMPUTER GAMES Monthly; $3.00

Like *EG*, *CG* aims squarely at VCS country. ("We're talking about those ten-year-olds", a company rep recently told our man in Chicago). Half the number of pages of its rival and correspondingly less advertisements. Nevertheless paper quality is excellent and of course full colour predominates. Layout is cheerful and uneconomical by British standards. Like *EG*, uses The Review as all-purpose feature device. No computer programs whatever — wholly a software buyer's magazine. Good writing; especially good letters.

Verdict: smart, a bit padded, good print job, may find life tough if videogame market continues to go down the tube as predicted.

K POWER Monthly; $1.95

Our American namealike, one of the slimmest of our sample at 64 pages, nonetheless takes the same definite step up the evolutionary ladder (so to speak) as *EG* by featuring type-in programs for major US computers and also "support" features . . . all of this, albeit, on a very modest scale. Otherwise . . . the mixture as before.

Verdict: half-hearted; bland; untidy.

VIDEO GAMES Monthly; $2.00

The mixture pretty much as before — *VG* (can *you* think of any unused 'G's'?) majors by a whisker on arcades, with ROM- and disc-based game reviews (in the usual various guises) predominating. Nothing for tappers at all — nothing remotely technical, in fact. Average issue 80-odd pages, the usual full colour and airy layouts. Our sample, interestingly, features a respectful interview with Nolan Bushnell and a tough, gritty, knowledgeable and utterly ruthless demolition job on the Timex-Sinclair 2068 (the US-packaged Super-Spectrum). Screen shots and nice artwork round it off.

Verdict: As Computer Games.

The above list represent the bottom rung (as it were) of our sample (in 'seriousness' terms). Next tier up finds us, as it does in the UK, among the dedicated-user magazines. These naturally exist, in great profusion, for all major machines, and many of them reach our shores to compete directly for sales with the home-grown product.

However not all of them do go on sale here. For example, Atari have magazine support in Britain, only not from American magazines. Two more Atarimags in our overall sample are *Antic*, which subdescribes itself as *The Atari Resource*(resourceful of them); and *Atari Connection* (perhaps the most uninspiring name of the whole bunch). Both are pricey at three bucks, actually well-presented and balanced, and aimed clearly at the novice (or relative novice, computer user. You expect, and get, quite long and easy programs, both games and utilities, in Atari Basic — but articles on, say, 6502, Assembler or Adventure Parsing would be wildly over the top of their mission profile. Both magazines also feature general articles, often of a 'speculative' and 'thoughtful' nature (i.e. padding).

As always it is all in four colours and on good, thick paper with a decent bit of a gloss to it. *Antic* is 100 pages, *Atari Connection* a little smaller at 80.

The single most irritating thing about all of these magazines (and there are many others we haven't even mentioned) is that as far as they and their huge readerships are concerned the words Spectrum or Acorn, Ultimate, Minter and Smith, don't mean a thing. In Britain the videogame machine was relatively slow to arrive — Sinclair's ZX80 was hard on its heels. As a result dedicated videogames never took massive root here, as they did in the States — they never had time to. Would-be computer types skipped that stage altogether and went straight into small, cheap micros, cassettes and started programming right away. It is doubtful if a purely videogame magazine could even have survived in Britain.

American computer game magazines are all intensely respectable, and for an American market, well-designed. And yet in Britain no equivalent readership is said to exist. There must be something significant in this, if I could only work out what it is.

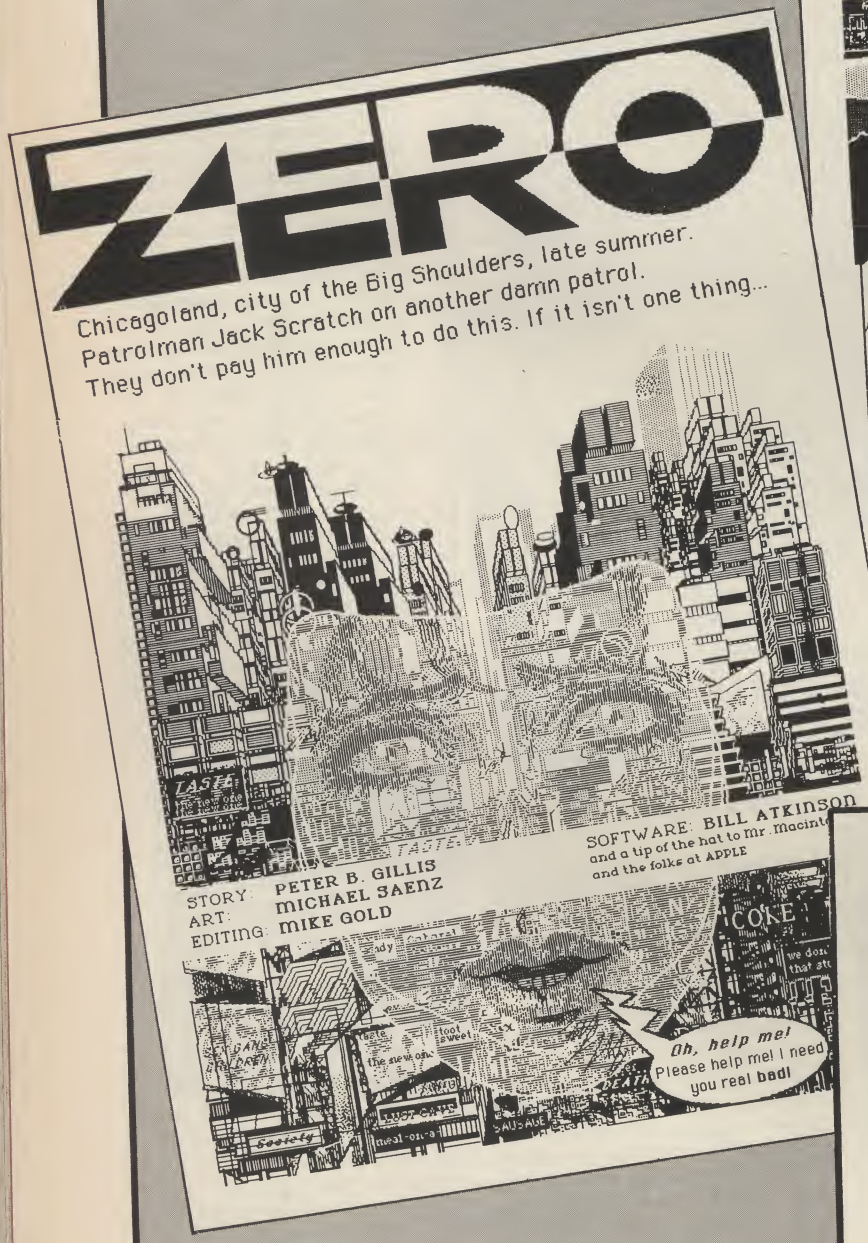
ALAS, NO LONGER WITH US...

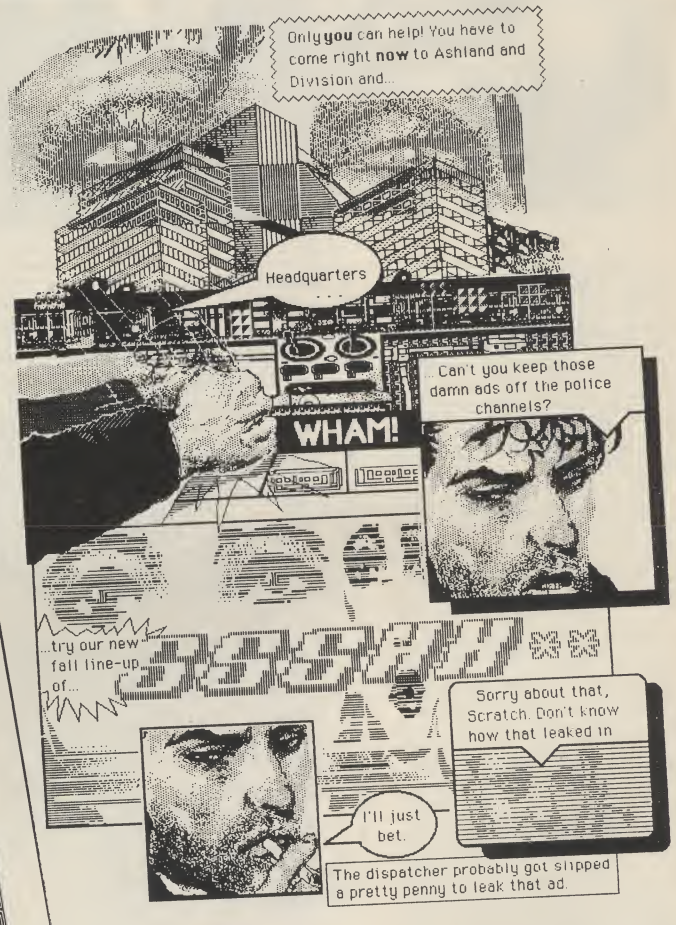
Not all of the vast range of US computer-game mags have stayed the course. One of the first, *Electronic Fun (incorporating Computer and Video Games)* transformed itself into *Computer Fun* a few months ago . . . but lasted a mere two issues. *Mikrokids* (pic), more or less the US equivalent (in content if not style) of our own dear departed *Load Runner*, merged recently with *K-Power* (see main text). It suffered, as *Load Runner* suffered, from a jovial, patronising, educational tone and was — in a word — just too juvenile for words. So down the tube it went.

Then there was *Joystick* — in this writer's view, probably the best of the originals in both in looks and style (even if it was as videogame-dedicated as its opposition). For two years it gave *EG* and *EF* a run and half for their money, but in circulation wars there are seldom winners, only losers, *Joystick* lost.

What You See

There's only one contender — and no contest — for the USA's Computer of the Year: it's the Apple MacIntosh. And although it's only been on sale for less than six months, owners are already using it to stretch a frontier or two. BIG K's MIKE GOLD, for example, also a comics editor and originator (his day job), has discovered Project Zero, the world's first comic produced entirely on a computer, artwork and all. Here's how it was done . . .





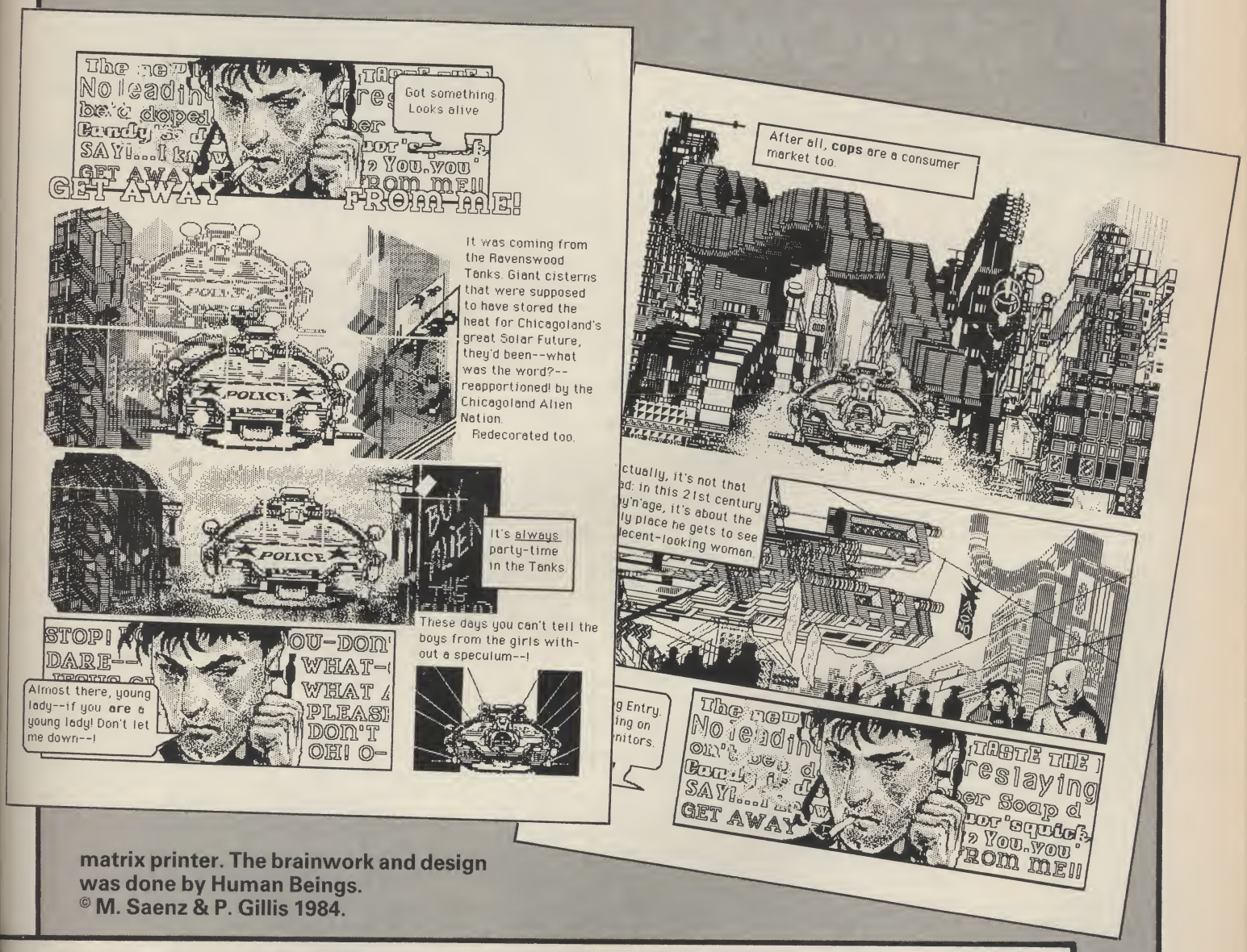
The artwork and lettering on this page was done entirely on an Apple MacIntosh computer and an Apple Imagewriter dot-

COMPUTER GRAPHICS. They're nothing new — people have been creating this sort of stuff for years. But in order to do so, they had to have constant access to a lot of expensive equipment.

Until now. In January of this year, Apple released the MacIntosh — a truly revolutionary machine. For a grown-up computer, it is relatively inexpensive. And unlike the other so-called personal computers, the Mac is totally graphics-orientated.

When the Mac came out, Apple introduced two programs: a decent word-processing package, and an extraordinary graphics package. Most people thought MacPaint was going to be fun, but of little use. After they got their

Is What You Get



matrix printer. The brainwork and design was done by Human Beings.
© M. Saenz & P. Gillis 1984.

hands on the program, they quickly changed their minds.

In the hands of painter/comics artist Mike Saenz, MacPaint became a tool to expand the sense of wonder. Saenz is best known for his work as an airbrush artist for Marvel Comics' upmarket Epic Illustrated magazine; MacPaint is about as far from an airbrush as a storytelling artist can get.

Whereas Saenz's work speaks for itself, you must remember that everything you see here was created from the ground up: nobody ever produced comics this way before. This work represents Mike's efforts after owning a MacIntosh for a mere five months.

In reviving his comic book story, Saenz turned to his friend, fellow Chicagoan Peter Gillis. A comics writer for five years, Gillis has written the adventures of most Marvel superheroes, as well as a number of characters published by leading independent comics publisher First Comics — who have shown a great deal of interest in Mike and Peter's efforts.

Their story — shown here still in development stage and only tentatively entitled *Zero* — was produced last July at the 1984 Chicago Comicon comic art convention to considerable acclaim. Fellow artists were scratching their heads, and writers, editors, and fans alike gazed upon *Zero* if they had just taken a good, hard look at the future.

They most certainly had.

ZIP CODE

HARD QUESTIONS

MIKE GOLD sums up the State of the Nations

SO *WHY* was the Consumer Electronics Show so important?

By now, you've probably been *Consumer Electronics Showed* to death. But retailer response has a life-and-death impact upon new products — and even upon old companies.

The summer show, held in early June in Chicago, is particularly important. Whereas the winter show in Las Vegas is often better attended, the summer show allows manufacturers to unveil their goodies in time for Christmas orders. A majority of home electronics items — particularly games and low-end computers — are sold during the last three months of each year.

Now that the show is behind us, what was unveiled is no longer as important as how the retailers reacted. Will they order it? Will they push it? What are they stuck with from last year?

Of those items in the gaming and computers arena, CES-watchers had four questions:

1) Does anybody care about the so-called "dedicated machines" — those that only play games?

2) Does anybody who is not on Atari's payroll actually believe they're still in the games business?

3) Does anybody believe the Coleco Adam is worth stockroom space?

4) And if Atari and Coleco are both on the ropes, where's the action?

The answers were quite clear: no, not really, no, and Commodore.

Nobody had much interest in hardware that could only play games. Imagic stopped making game carts for all Atari, Intellivision and Coleco formats, concentrating on the C-64, with a lesser interest in Apple, IBM, and the VIC-20. The Coleco people must have been thrilled at that one: while passing over Coleco, Imagic was making software for a machine six months dead.

Indeed, only Parker Brothers and Activision were showing any real support for Atari and Coleco — and neither company put a lot of effort into the Adam. It should be noted Parker and Activision — both with some interesting-sounding games — were producing their wares in just about every conceivable format, save Sinclair. The dedicated machine is an item of the past.

Atari made a strategic mistake. The show is split up among four different buildings, with most "big boys" in the main facility. The computers and games folks had their own building, but Atari, in a typical fit of corporate megalomania, put its display in the main plant. Many retailers (or more appropriately, their games/computers buyers) never went to the big room, limiting their show leather to their own bulding. If Atari was playing Mountain, many buyers just weren't interested in coming to Mohammed.

Perhaps it was just as well. Atari's big announcement was its super new 7800 game computer, with its ability to produce almost arcade-quality graphics. Retailers who went over to their exhibit generally told me the last thing they wanted to see from Atari was another dedicated machine: "Just what I need — still another format for *Pac-Man,*" one major buyer told me bitterly.

"If Atari will advertise it, I suppose I'll have to stock it," another buyer stated. "But believe me, I'm not going to get stuck with a lot of those things in my warehouse."

No other software games manufacturer, as of this date, has announced any support for the 7800. Atari is out there all alone.

As for Coleco . . . well, it was so quiet at the huge Adam exhibit, you could hear a stockholder's blood pressure surge. There was some interest in Coleco's new software, but the Adam's an industry joke.

Coleco just might hold on, but with their basic game unit selling for $79.00, I wouldn't bet the rent on it.

So who's the winner? Commodore, hands down. But they probably don't believe it.

Everybody loves the C-64. Every software manufacturer had its games available for the C-64. All the educational stuff was being written for the C-64. Other formats had varying levels of support, but everybody — even Atari — was backing the 64.

I doubt Commodore was all that enthusiastic. Their big announcement, the "Plus/4" (the renamed C-264) met a lot of scratched heads. This new unit is not an enhanced version of the 64 — indeed, the graphics and sound are inferior. What it is, is an inexpensive computer with built-in word processor, spreadsheet, database management, and business graphics. But the Plus/4 is to these functions what your fingers are to a calculator: Anybody who needs a computer with those capabilities quickly will realise that for a couple hundred bucks more, they could buy a low-end Apple or other, similar "real computer".

But The Marketplace, the true basilica of capitalism, patted Commodore on its head and pointed at the goldmine: The Commodore 64. The machine that, in spite of its age, was the true winner of the Consumer Electronic Show sweepstakes.

Seen Better Days . . . Atari's 5200 game player, its 600XL computer, and the long-discussed AtariTel telephone terminal. Atari is making noises like they're still alive, but they haven't manufactured a 200 player since February, and the 600XL is selling like day-old hotcakes. And nobody is actually talking about AtariTel.

Also Seen Better Days . . . IBM's PCjr, and even the mighty PC itself. Nobody's buying the former, and the latter is fighting competition from every conceivable corner. IBM cut the retail price on each nearly 25%, and the PC's built-in memory had been doubled.

IBM's new PC is likely to abandon the 5¼" floppy, in favour of the 3½" Sony hard-shell discussed in Apple's Macintosh.

And while I'm on the subject, IBM was hardly pleased to discover Apple's much-ballyhooed Macintosh has become the fastest selling personal computer in history.

STATESIDE CHATTER

Stateside Chatter: So what did I like at the summer CES? Well, you have to take games announcements with a grain of salt — the games are rarely as great as their prototypes — but I found the science fiction novel tie-ins of interest. These include *Hitchhiker's Guide to the Galaxy* (created, in part, by Hitchhiker's author Douglas Adams), Isaac Asimov's *Robots of Dawn*, Ray Bradbury's *Fahrenheit 451*, and adaptations of novels by Arthur C. Clarke, Robert Heinlein, and Larry Niven.

The game I'm having the most fun playing is Penguin Software's *Transylvania* . . . as written for the Macintosh. Yes, that's right — the one machine that is supposed to be useless for gamers. Well, it is great for adventure gamers, and the Mac's enhanced black-and-white graphics allows *Transylvania* for the Mac to run rings around all other versions.

Next month . . . Anything *but* the Consumer Electronics Show . . .

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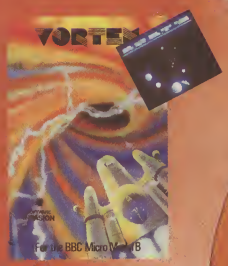

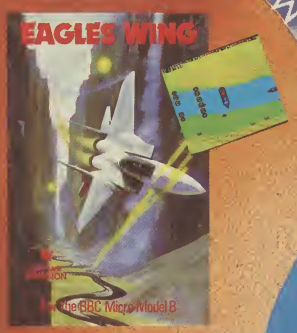

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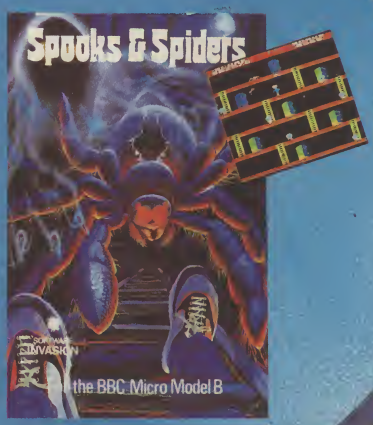

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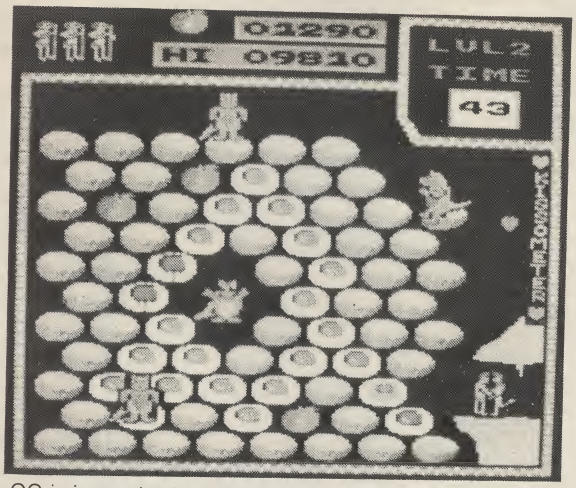

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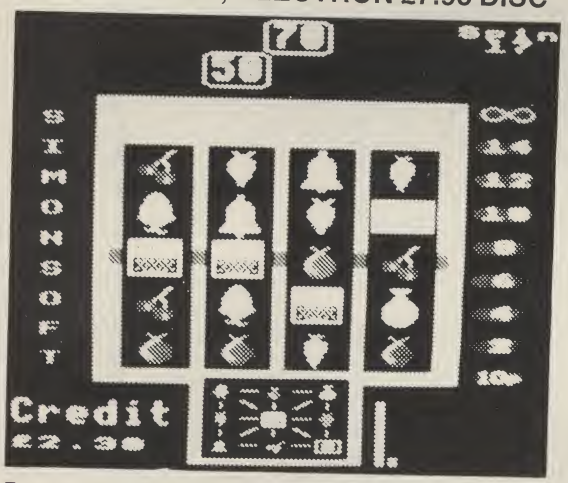

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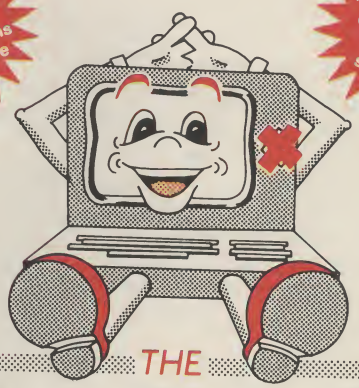

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LISTING 1

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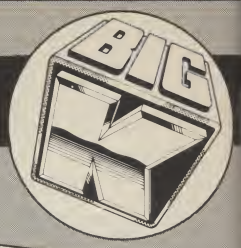
 10 REM   Extension to Hi-res
 20 REM    Printing  Routine
 30 REM   By  Richard Taylor
 40 REM
 50 CLEAR 64716
 60 LET a=64717
 70 FOR l=1 TO 7
 80 LET t=0: READ v,a$
 90 IF LEN a$/2<>INT (LEN a$/2)
THEN GO TO 200
100 FOR c=1 TO LEN a$ STEP 2
110 LET x=CODE a$(c)-48-7*(a$(c
)>="A")
120 LET y=CODE a$(c+1)-48-7*(a$
(c+1)>="A")
130 POKE a,16*x+y
140 LET t=t+16*x+y
150 LET a=a+1
160 NEXT c
170 IF v<>t THEN GO TO 200
180 NEXT l
190 PRINT "Data OK - Now load P
rinting      Routine & Save": STO
P
200 PRINT "ERROR in line ";990+
l*10
210 STOP
1000 DATA 6067,"3E03CD01162A515C
110400193E50BE2802CF122A515C11F0
FC7323722100002258FEC9FE20303BFE
063835FE18303111FDFC6F260029195E
2356EBE9D0FD2DFD"
1010 DATA 8782,"96FDA4FDB2FDC2FD
2DFD8FFD2DFD2DFD09FE09FE09FE09FE
09FEECFD1FFE1FFE3E3FFDCB57462036
FEA53805D6A5C3100CFE803806FE9030
023E20325EFE2A58"
1020 DATA 8841,"FE225CFECD5FFE2A
58FE7DC6086F300A7CC60867FEB03802
CF042258FEC9F53E20325EFE2A5AFE22
5CFEFB76CD5FFE2A58FE225CFEF1325E
FECD5FFEFDCB5786"
1030 DATA 6939,"18C52A58FE2E0018
C72A58FE7DA720013C3D6F2258FEC92A
58FE7D3C20023EFF6F2258FEC92A58FE
7C3CFEB038023EAF672258FEC92A58FE
7CA720013C3D6722"
1040 DATA 8446,"58FEC92A58FE7D3C
200C7CC60867FEB03E003802CF046FE6
7F20EB2258FEC911F2FDC3800A11F0FC
CD800AFDCB5786A7C8FDCB57C62A58FE
225AFEC91112FE32"
1050 DATA 6218,"0E5CC3800A11F0FC
CD800A573A0E5CC311221128FE320E5C
C3800A1131FE320F5CC3800A11F0FCCD
800A4F3A0E5CFE16280A3A59FE473A0F
5C4F1803FD46D578"
1060 DATA 1546,"FEB03802CF04ED43
58FEC900000000"
```



MORE HI-RES PRINTING

...In which RICHARD TAYLOR continues his arcane and fearfully knowledgeable series on Hi-res programming tools for Sinclair Spectrum

LAST MONTH I presented a high resolution printing program. This time I'm going to continue (why not?) by listing an addition to the old routine which improves it so that it can be used directly with PRINT statements — in stark contrast to having to use unwieldy pokes and machine code USR calls.

The augmentation to the original program will also give it same some new features, such as actually being able to define the colour the output is printed in, a routine to help make the flicker eminent in the first version a thing of the past and to allow you to Hi-Res print whole strings of characters in one fell swoop.

As with the last program, this also is written in machine code. If, like the majority of the computerised population, you've got an instinctive fear of MC, then don't worry; the program comes nicely packaged in a BASIC format — listing 1 for 48K hackers or the second listing for relatively impoverished hackers of the 16K variety. The loader prog also incorporates a checksum routine, which should prevent any crashing machine code or hex hassles.

Before I continue, I feel I should warn you that you'll need to muster a copy of last month's prog from somewhere. If you didn't type it in, or the version you did possess was mislaid/erased/savaged by a mad dog then you'll need to either nick or cadge a copy. Failing that, you'll need last month's mag and some finger power. Once you've sorted that out, you're ready to type in this month's listing. After you have RUN the program (and waited a couple of minutes), you'll get one of two messages; either one instructing you to load the Hi-res printing program from last month and then save or, for the less fortunate, a message informing you that there is an error in a certain DATA statement. If you do get the latter message then I'm afraid that you'll have to find the error in the offending line and correct it before trying your luck at re-running. Once you're successful you can load the code from last month's program with 'LOAD "" "CODE' and then make a couple of copies of the new program

LISTING 2

```
10 REM    Extension to Hi-res
20 REM     Printing  Routine
30 REM    By  Richard Taylor
40 REM
50 CLEAR 31948
60 LET a=31949
70 FOR l=1 TO 7
80 LET t=0: READ v,a$
90 IF LEN a$/2<>INT (LEN a$/2)
THEN GO TO 200
100 FOR c=1 TO LEN a$ STEP 2
110 LET x=CODE a$(c)-48-7*(a$(c
)>="A"):
120 LET y=CODE a$(c+1)-48-7*(a$
(c+1)>="A")
130 POKE a,16*x+y
140 LET t=t+16*x+y
150 LET a=a+1
160 NEXT c
170 IF v<>t THEN GO TO 200
180 NEXT l
190 PRINT "Data OK - Now load P
rinting      Routine & Save": STO
P
200 PRINT "ERROR in line ";990+
l*10
210 STOP
1000 DATA 5427,"3E03CD01162A515C
110400193E50BE2802CF122A515C11F0
7C7323722100002258 7EC9FE20303BFE
063835FE18303111FD7C6F260029195E
2356EBE9D07D2D7D"
1010 DATA 6606,"967DA47DB27DC27D
2D7D8F7D2D7D2D7D097E097E097E097E
097EEC7D1F7E1F7E3E3FFDCB57462036
FEA53805D6A5C3100CFE803806FE9030
023E20325E7E2A58"
1020 DATA 7177,"7E225C7ECD5F7E2A
587E7DC6086F300A7CC60867FEB03802
CF0422587EC9F53E20325E7E2A5A7E22
5C7EFB76CD5F7E2A587E225C7EF1325E
7ECD5F7EFDCB5786"
1030 DATA 5915,"18C52A587E2E0018
C72A587E7DA720013C3D6F22587EC92A
587E7D3C20023EFF6F22587EC92A587E
7C3CFEB038023EAF6722587EC92A587E
7CA720013C3D6722"
1040 DATA 7422,"587EC92A587E7D3C
200C7CC60867FEB03E003802CF046FE6
7F20EB22587EC911F27DC3800A11F07C
CD800AFDCB5786A7C8FDCB57C62A587E
225A7EC911127E32"
1050 DATA 5578,"0E5CC3800A11F07C
CD800A573A0E5CC311221287E320E5C
C3800A11317E320F5CC3800A11F07CCD
800A4F3A0E5CFE16280A3A597E473A0F
5C4F1803FD46D578"
1060 DATA 1418,"FEB03802CF04ED43
587EC900000000"
```

with:-

SAVE "HRES PRNT2" CODE 64717,651 (for 48K hackers)

SAVE "HRES PRNT2" CODE 31949,651 (for 16K hackers)

Remember to VERIFY — it's not hard to forget to connect the MIC lead up when you save and end up with a blank tape.

Now for a description of your new program. First of all, you'll need to start any program you write utilising the routine with a RANDOMIZE USR 64717 for 48K owners or RANDOMIZE USR 31949 for 16K owners. You'll no doubt be pleased to know that this is the only machine code call you'll need as the rest can be controlled with the more friendly PRINT statement. After using this call you won't be able to use a ZX printer, if you're lucky (sic) enough to have one, since any output that is usually directed to the printer, using LPRINT or LLIST, is diverted to the hi-res print routine. After that, you can output to the Hi-res routine with a PRINT #3; command followed by . . . what you want.

The syntax of the new style PRINT statement is much the same as a normal one except, of course, everything is done in Hi-res. As usual, you can use the normal colour directives to change colours but, although the program will accept it, the INVERSE directive has no effect. You can use OVER, but its function is somewhat different to normal. AT and TAB will work but they need to be supplied with Hi-res co-ordinates to work on i.e. the range for row numbers is 0 to 175 and 0 to 255 for column numbers. What you print is defined in the usual way, either as strings or as numbers. There's no restrictions on doing maths or doing a bit of string slicing in the statements; you can even put something like 1/COS (SQR ((x–2*3))) if you're mathematically minded.

A simple example. The program below will move an "O" from the left to the right hand side of the screen. With this, and any other programs, 16K hackers will have to change any occurrence of USR 64717 to USR 31949.

```
10 RANDOMIZE USR 64717
20 FOR a=0 TO 248
30 PRINT #3; AT 100,a;"O"
40 NEXT a
```

Listing 3 is in a high-res version of the bouncing ball program.

When you print strings of characters, each successive character is printed 8 pixels to the right of the previous one, taking a new line if necessary, as in normal PRINT statements.

Unlike normal print statements, however, the Hi-res ones won't ask you if you want to scroll when the printing reaches the bottom of the screen, they just stop with a "5 Out of Screen" error report. The use of printing strings of characters is illustrated below, with a short example which moves the word 'SPECTRUM' across the screen:-

```
10 RANDOMIZE USR 64717
20 FOR a=0 TO 192
30 PRINT #3; INK RND*7; AT
     99,a; "SPECTRUM"
40 NEXT a
```

The operation of OVER in Hi-res is somewhat different to its normal operation. OVER is used to implement the anti-flicker device the program possesses. What the anti-flicker routine does is simply allow you to overprint a redundant character with a space and move it to a new position a redundant character with a space and move it to a new position in one command. However, it is assured that you'll never see the character inthe intermediary stage of being overprinted but not re-printed (the cause of flicker). What you do is, in the PRINT #3 statement, put AT (where the space is to be printed — i.e. the character's old position); OVER 1; AT (the new position); "(the character you want to print)". An example would be PRINT #3; AT oldy, oldx; OVER 1; AT y,x;"O". This technique is used in listing 3 at line 40.

LISTING 3

```
10 RANDOMIZE USR 64717
20 LET x=128: LET y=88: LET
oldx=x: LET oldy=y
30 LET a=2: LET b=-2
40 PRINT #3;AT oldy,oldx; OVER
1;AT y,x;"O"
50 LET oldx=x: LET oldy=y
60 LET x=x+a: IF x>248 OR x<0
THEN LET a=-a: GO TO 60
70 LET y=y+b: IF y>167 OR y<0
THEN LET b=-b: GO TO 70
80 GO TO 40
```

No. 5: EASTERN FRONT, 1941 (Atari)

EASTWARD HO!

Operation Barbarossa, 1941, was the code-name for the German invasion of Soviet Russia. The invasion itself came badly unstuck, millions of lives were lost and untold damage caused. The only good result was one of the best ROM computer games ever made. JOHN CONQUEST appraises . . .

NOW THIS is what I call a real computer game, one that uses the Atari as a thinking machine not just a big fast storage bin for jumped-up video games. You play the Germans, the Atari (any model) plays the Russians and, as your team were the real-time losers, it takes mucho brain strain to reverse the result of the german invasion of Russia. Even if ther was a loony at head office, the Hums had some very bright boys on the job — you have to do better than they did.

Open the £19.95 box and you get a ROM cartridge, a very useful operational map of the game area — Poland to the Urals, Finland to the Caucasus — and possibly the worst instructions ever.

MAP

Plug in the cartridge and a joy stick, switch on and you get a small portion (about ¼th) of the map on screen which you scroll round to get the other installments. There are 1840 'squares' on the map but most of the action will be in the western half. Take a long hard look at that patch of dark green Vs in the left middle. That's the dreaded Pripet Marshes and they are very bad news.

Select offers you Learner, Beginner, Intermediate, Advanced, Expert 1941 and Expert 1942. With Learner you get a single Panzer corps while Uncle Joe had a milita army standing pat on Moscow. The 'object' is to take Moscow but the real idea is to run the unit through the various kinds of terrain to see what happens. (It slows down drastically when it hits marshes, forests and rivers, that's what happens.) so the first lesson you learn is to keep 'em in the open.

Place the cursor on any unit, fire, and its name and current status will appear at the bottom of the screen. Status is in two parts, muster and combat strengths. The latter is the business end but at advanced levels you have to keep a sharp eye on the balance in case panic sets in. While firing, a Maltakreuz (Maltese cross) appears over German units; move the stick in the direction you want the squareheads to go and the cross moves accordingly. You can enter up to eight orders at a time, changing direction as often as you like, and little green arrows flash along the route with the cross at the terminus.

Panzers moving unchallenged across open country can, in practice, only manage seven orders a turn and that kind of breakout stuff comes much later, after you cross the Dnieper, so what with terrain effect and the commies the chances of all your orders being carried out are pretty remote.

When you've run out of ideas, get the vital sector on screen, press Start and the computer will execute as much and as many of your orders as it thinks reasonable. At the same time it'll move the Russians, usually to the same places, curse it. Anything to mess you about. All this happens to the sound of muted heavy guns.

Beginner gives you 17 Germans while the computer, no fool, gives itself 32 Russians. The sole object of this limited (northern sector only) exercise is to take Moscow. At all levels a turn is a week and Learner, Beginner and Intermediate run from June 22 to September 28 1941. Beginner is best used to practice co-ordination. It's essential not to create traffic jams, blocking units in behind each other, especially Panzers which need plenty of elbow room.

This is where you learn about the Pripet Marshes. Try sending units through them and see where it gets you. Even at this level there are inevitable, savage and crucial battles round Minsk, Kiev and Smolensk.

On to Intermediate and you now have to take Moscow, Lenigrad and Stalingrad with 30 crops, the godless Reds fielding 66 armies. The front Stretches from top to bottom of the map and it's a lot more work. Even so it's not really difficult yet and solid methodical slugging should see you right.

Advanced is something else again. You have 42 corps, with reinforcements trickling in through Poland, Rumania and Hungary, a flashing asterisk indicating availability, plus two Finns waiting for you to take Lenigrad. But the Russians have 96 armies and their two best generals, Autumn and Winter, the guys who saw off Napoleon when he tried this game. Mud sets in on October 5 and everything freezes over, the screen going a ghastly white, on November 2, only easing up slightly just before the end of the game, March 29 1942. To add to the fun you also have to get to Gorky, Kuibishev, Kazan and Krasnodar, way out east.

Expert 1941 also runs from June 1941 to March 1942, with 47 Fritzes 1941 also runs from June 1941 to March 1942, with 47 Fritzes facing up to 119 Ivans, and there are three new wrinkles: a massive negative starting score, four useful but delicate Fliegerkorps and you have to put units into specific modes. The Fliegerkorps are Stuka units whose strength can be added to attacks, but their bases have to be kept near the front but well away from any Russians. The modes are standard (do anything), assault, forced march and entrenchment, all of which have pros and cons.

Expert 1942 is identical except that the campaign runs from May 1942 to March 1943, with appropriate set-up. I must admit that I don't know whether these levels are actually winnable — Heinz Guderian I ain't — but the Save routine is vital. You gotta sleep sometime!

It always pays to combine forward planning with simple opportunitism. As you can only see part of the battlefield at a time, it's useful to think of the units in a given area as a Group and have some idea of what each Group is trying to do. Exploit gaps, sure, but don't get carried away or the Panzers will be cut off and massacred.

The best way to wipe Bolshy units out is to bracket them between your own and this trick can be pulled off on quite a large scale if your Panzers are doing their job. Of course the Russians can, and do, play this game as well.

Eastern Front is the work of designer Chris Crawford who also did the conceptually excellent but functionally rather primitive *Legionnaire* (Avalon Hill). A great strength of his designs is that apart from using the space bat to cancel orders and the Start button to execute them, they're completely joystick operated which makes them far more playable than, for instance, Strategic Simulations' horrendously complex all-keyboard *Battle for Normandy*.

Like all the present generation of wargames, *Eastern Front (1941)* is very obviously based on a board game, avalon Hill's classic *Stlingrad*. But as a computer game it's in a class of its own, the state of the art of electonic kriegspiels.

INTERACTIVE BREAKTHROUGH- OR LOGISTIC PAIN?

RICHARD BURTON checks out *Empires*.

LET ME tell you, this Galactic Domination lark is real hard graft. There are fleets to build and dispatch, mining operations to set up, battles to be fought and alliances to be formed. If that wasn't enough there's the constant threat of that awesome pan-galactic entity known as the Post Office to contend with. Heavy stuff.

You're confused? I can dig it. But what we have here is one of the more unusual offerings in the field of computer games — Imperial Software's *Empires*. More than a game really, since Imperial refer to it as a "... Fully interactive strategy game". Interactive it certainly is with room for up to six people (plus one umpire) to play — none of whom need ever meet any of the others. Such a unique, untypical games situation comes about by each player only having his or her own part of the game to contend with and communicating with the others through the umpire.

Let me explain. The basic *Empires* kit comes in a cardboard box looking not unlike a traditional board game. Only a flash containing the words "For 48K Spectrum" gives away the true nature of the game. Inside a styrofoam tray contains four program cassettes, 3 for the players and one for the umpire, individual player rulebooks plus a larger Umpire's manual, four cardboard Galactic Maps and a large wodge of small record cards to keep track of individual movements once the game really gets into its stride. An Expansion Kit (the first of several that are promised) contains 3 more cassettes to bring the player roster up to six plus fresh supplies of Galactic Maps, record cards, etc.

When you're a long way from home you can never have too many Galactic Maps.

Once the basic kit has been acquired three aspiring, power-hungry tyrants, each with access to a 48K Spectrum, are chosen at random and supplied with one of the player cassettes plus rulebook and all the trimmings. A fourth individual, who knows where the true power lies, takes the umpire's cassette and rulebook and all four depart to their corners (homes?) to prepare to intergalactic conflict.

NUMBERS

Depending on numbers players find themselves as either a human of the Federation of Earth, a reptillian Warlord of Tyr or a mechanical Robozon of Tyr. Each has a home star system, a population to protect and a budget. However, regardless of race, creed or date of manufacture, the subsequent gameplay is the same.

First the program is loaded and a name and security code chosen which will stay with the player throughout the game. The Main File gives three main options: Military, Strategic and Mining.

Military is to do with building ships (battlecruisers and scout ships) and assigning officers to them from a roster supplied.

Strategic Command handles all military and civilian movement. Solar systems can be scanned for information before committing forces to them. The on-screen map matches the card Galactic Maps supplied with the game so that constant checks on deployment of forces can be kept.

Once all the data has been fed in the player's first move is complete. The data is SAVEd onto a blank cassette and given (sent?) to the umpire. Depending on how widely scattered the players are, this is where the awesome cosmic power of the Post Office could come in, by sending important data into the nearest black hole. A serious flaw in the system, we think.

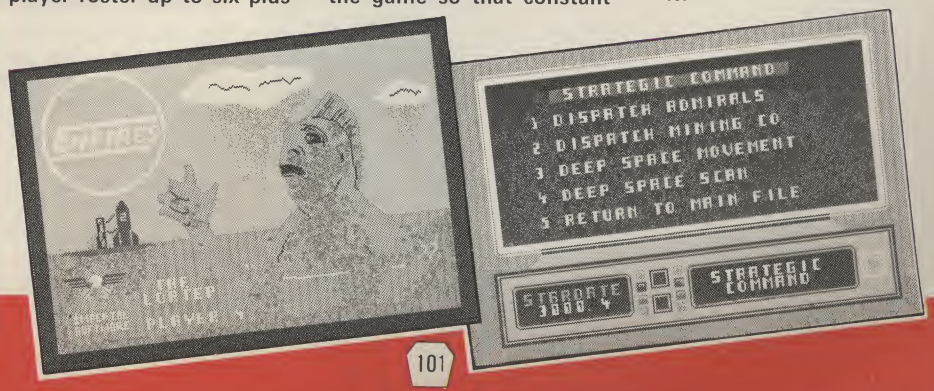
Assuming that all the players' moves arrive safely and before interest flags the umpire, using his own special program, evaluates the total situation. He has the power to resolve the outcome of battles, communicate with players individually, even (sneaky devil) send false data or garbled messages.

Once battles have been decided, claims staked, etc., the updated blanks are returned to the players ready to begin the second move.

As the game progresses alliances can be formed between players, secret messages exchanged, etc. Be warned that *Empires* could go on for a very long time — games of months in duration are not expected to be uncommon.

The objective is simply to trash every other race in the universe and become the Supreme Ruler. There are only three ways to lose: If a player's population drops below a danger point (not very likely); total bankruptcy; or an enemy race destroying a home planet's defences (most likely).

Without doubt Imperial Software have an extremely impressive product in *Empires*. It's state-of-the-art in computer strategy games. Their approach is thoroughly professional. Screen graphics are very good with fast, menu-driven commands. *Empires* is complex and stimulating enough to keep a player's attention for a long time (it will need to) and has the potential for expansion (already started). But — it has to be said — who will buy it?



ALL PRESENT AND CORRECT

...Snaps BERNARD TURNER, dashing of a crisp salute as he sums up his epic 3-porter on the 68000 Wonder Chip

How Hardware Influences programming

THE MOTOROLA 68000 chip on its own, unattached to anything, would be as much use as a dog's dinner. To make it useful you have to attach memory (normally in the form of RAM, ROM and EPROMs) and I/O devices (often known as 'Ports').

The chip is connected to these by what is commonly known as a 'Bus', in actual fact by three distinct busses, 'Control', 'Data' and 'Address'.

The function of Address Bus is to select the correct 'slot' or location. The function of the Data Bus is to carry data form/to the selected (by the address bus) location. Finally the Control Bus governs and monitors the state of the micro hardware, especially the interaction between memory and the 68000.

Each Bus is a collection of electrical lines. Generally speaking these lines can be on or off (i.e., set or clear), thus conveying binary information. In the case of the Data Bus these number 16 and are numbered from 0 to 15. The Address Bus has 23 lines and they are numbered 1 to 23.

The Control Bus has many different functions to perform in its role and each are individually named such as 'DTACK' and 'UDS'.

Those of you who know about address lines may be asking 'what has happened to Address line zero?' — where the hardware starts to affect the software. When there isn't a zero address line then a processor cannot select odd numbered addresses (binary remember) because it cannot switch on or off a non-existent line. This therefore induces the processor to think of the memory as occurring on even boundaries. Because of this, if you try and access odd memory via an Address Register or the Program Counter then an error will occur. This error is called an Address Exception.

There are only 23 Address lines emanating from the 68000 and 68010; the top eight bits of the Program Counter and Address Registers are thus superfluous, and presumably are there only for upward compatibility with future Motorola 68000 based products. Just to confuse matters the 68008 chip (as used in the Sinclair QL) only has 20 Address lines, numbered 0 to 19, available from the chip itself. This means that only one(!) megabyte of memory is directly addressable if you are using the 68008 variety. Sharp-eyed readers among you may notice that there is an A0 address line; this is because the 68008 reads its data in one-byte chunks (there are only 8 Data Bus lines). It still maintains compatibility with the 68000 by forcing you to use even address boundaries.

68000 Architecture

THE MOTOROLA 68000 contains the Data Registers D0 to D7, Address Registers A0 to A7, a program counter and a status register.

Data Registers

Data Registers are general purpose registers. They can operate on byte, word and long word sized data. They can be used as indexes in PC and Address Register Indirect addressing modes. Unfortunately they cannot directly point to memory locations.

Program Counter

In the 68000 the Program Counter is a 32-bits wide Register. It functions as a pointer to a memory address where the next instruction to be executed is contained. Each time the 68000 wants to start a new instruction it consults the Program Counter (PC) as to from where in memory it should fetch the new instruction.

Status Register

The Status Register reflects and influences the MPU as it is processing. It is only 16 bits in size and is distinctly separable between its top and bottom 8 bits. The top byte is known as the System Byte. The bottom byte is known as the User Byte or Condition Code Register.

The Status Register Format

Bit	Flag	
0	Carry	(C)
1	Overflow	(V)
2	Zero	(Z)
3	Negative	(N)
4	Extend	(X)
5-7	Unused	
8	Interrupt mask 0	
9	Interrupt mask 1	
10	Interrupt mask 2	
11	Unused	
12	Unused	
13	Supervisor	(S)
14	Unused	
15	Trace	(T)

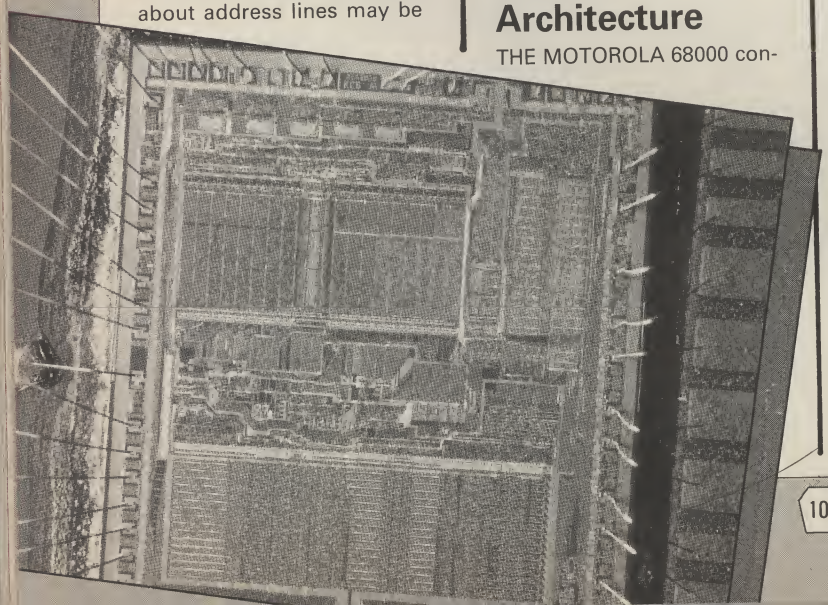
Supervisor Mode

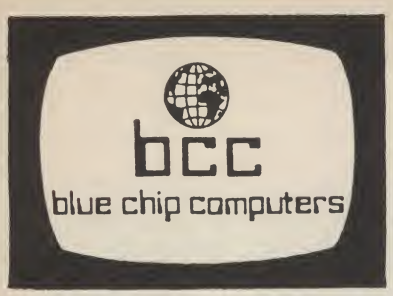
The Bits can be either Set or Clear. The Status Register can be modified. What can be modified depends on the register itself — to be specific, it depends on the Supervisor Flag. If it is set then the 68000 is in Supervisor Mode of processing, otherwise User mode.

The difference between these two modes is mainly one of privilege. In Supervisor Mode you are allowed to execute any legal instruction. In User Mode there are a few instructions you cannot execute, these being mainly instructions that would allow you to enter Supervisor Mode! If not in Supervisor Mode then it should only be possible to enter it by an Exception or by a 'entrance' made available to you by the person who programmed the Supervisor Mode portion.

Trace Mode

The most valuable bonus of Supervisor Mode is its ability to single-step through each instruction. 'Single-stepping' is the execution of a single instruction, then normally a jump to a monitor routine, which allows you to examine and modify processor registers. You can then execute the next instruction and so on. Single-stepping is initiated by setting the Trace Bit (T) to one.





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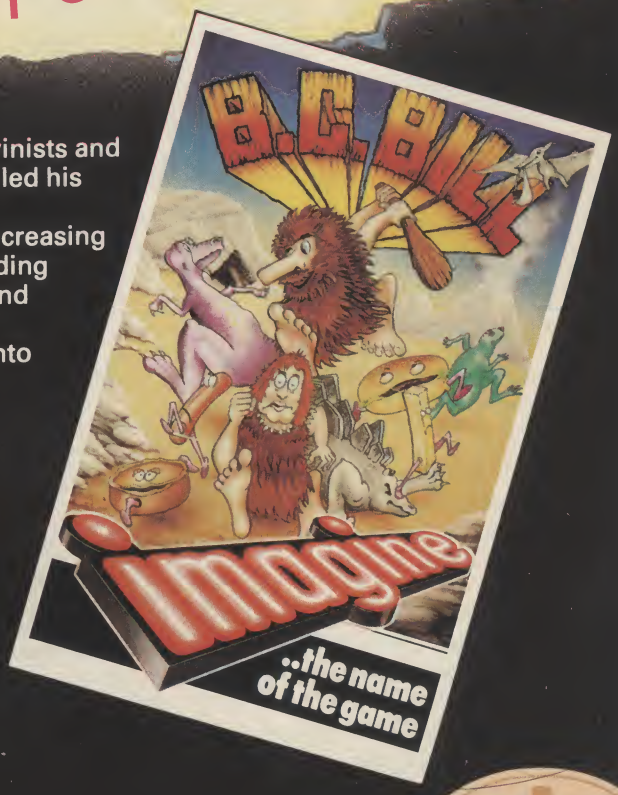

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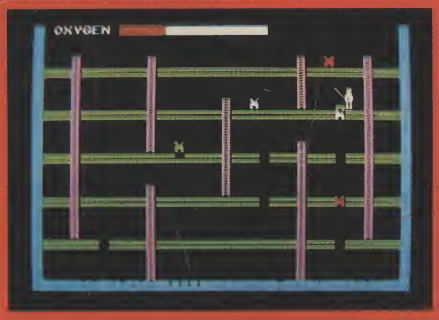

SPACE PANIC — £7.95

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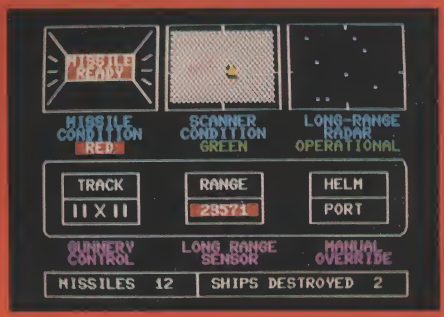

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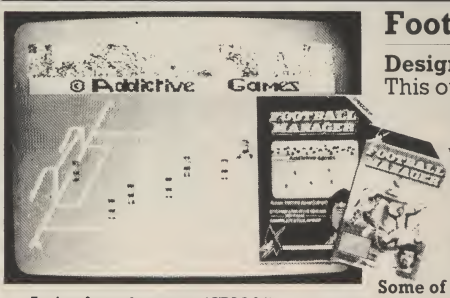

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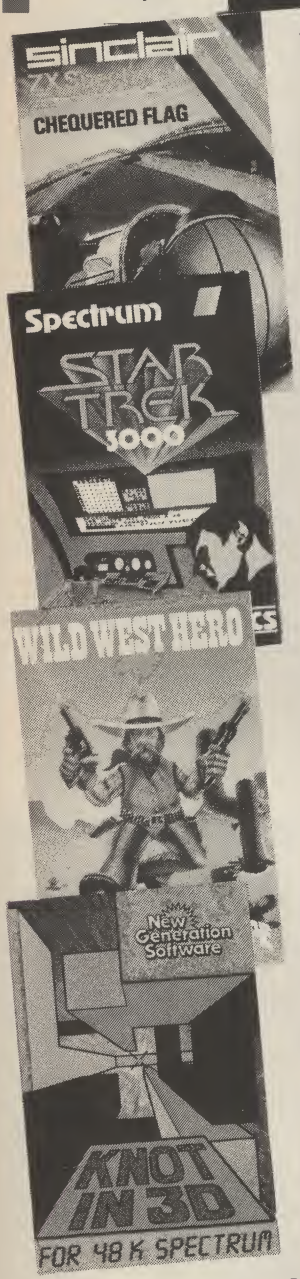

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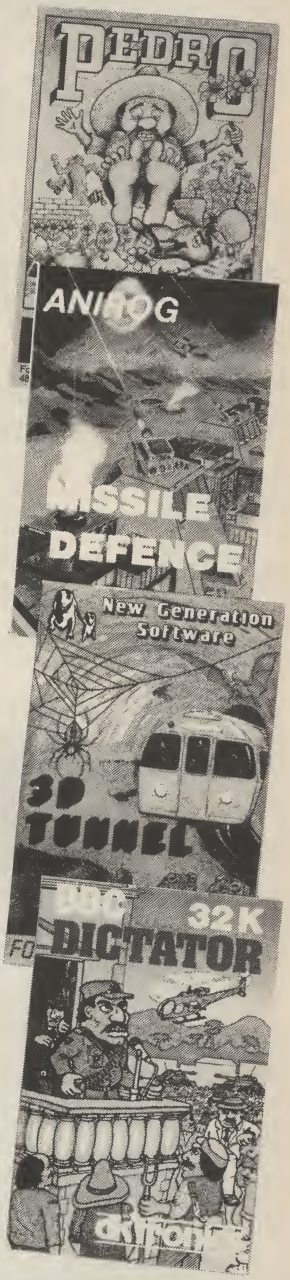

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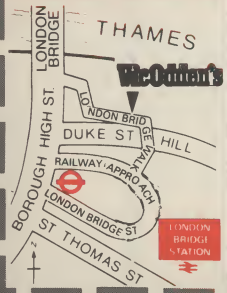

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Letters to BIG K

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THIS MONTH'S ALL-PURPOSE BIG HELLO TO . . .

Alan Odiam, David Jones, Ian Raine, Arthur Moore, Shirley Wills; and Thor Franksson and Gudjon Runarsson from Iceland.

Map Plotters Foiled

My friend and I have completed a map of Ultimate's *Sabre Wulf*. If you would like a copy of the map, which has 256 locations, please send your offer. We have sent copies of this letter to other magazines, so the highest offer gets the only copy.

ALAN PARKER,
Brighton, Sussex.
● We already have one (see page 15). Better luck next time.

CATCH 22

The Shadow asked about the real state of computers in schools (issue #2). At Stowmarket High School we have 10 480Zs connected to a 380Z, crammed into a tiny exneedlework room. These are supposed to fulfil the needs of over 1,000 of us. And as for the state of 'computer awareness' (let alone the prospect of 'O' levels) all we've got is 30 kids playing games.

In desperation, I wrote to my LEA. They replied: "Computers are advancing so rapidly that there is little point in trying to teach the subject to children, as it will be different in a week." Fair enough. But in the 'O' level Computer Studies syllabus, it says you must know all about binary, hex and data encoding etc. So here I am stuck in catch 22. Isn't the British Education system wonderful?

ADRIAN HUNT,
Badley, Suffolk.
● No.

HOW MANY?

Just one groan about Big K magazine — the amazing array of advertisements that seem to have literally taken it over. Did you know there were 41 in issue #4?

CHRISTOPHER SIMPSON,
Northants.
● No kidding? There were supposed to be 43. (Heads will roll . . .).

HOW MUCH?

I bought a Prism VTX 5000 modem and logged onto Prestel and Micronet. There's lots of info, free games and top games at bargain prices. Great! but then I discovered the cost.

There's about £100 to start with, then a subscription fee of £14 every 12 weeks. PLUS the telephone bill. So if you're thinking of doing the same — remember you'll need MONEY.

DOUGLAS SPENSE,
Stockport.

TOWING THE LINE

HERE ARE my suggestions (Big K Issue #2) for suitable network names for political parties . . .

SDP/Alliance — TOGETHERNETS/WETNET
Shirley Williams — HAIRNET
The Liberal Party — DRAGNET
National Front — SKINNET
Conservatives — COBWEB/BANNET/OBSTINET
Scottish Nationalist Party — LOCH-NETS
Communist Party — REDNET/DOMINET/BREZHNET/NIET

IAN WESTION,
Whetstone.
● Thank you, Ian. That's five pounds net profit.

1985 Champ?

Do you think MSX will have a big impact in Britain?

With Sinclair now concentrating on QL, will this knock the Spectrum down to a relative ZX80 level by comparison?

DAVID THOMPSON,
Leeds.
● Yes. No.

ETTERBASELETT

K edited by NICKY XIKLUNA

BURN BABY BURN!

I want to know if any BBC freaks out there have managed to kill the dragon in Bug-Byte's *Twin Kingdom Valley*. Whatever I do, I get frazzled by his fiery breath. I want to kill him because of the master key he posseses.

ALUN PHILLIPS,
Merseyside.

● Beebed-up Dorkslayers please assist. Meanwhile, here are some *Jet Set Willy* aficionados athirst to spill a bean or two . . .

JSW Tip 1

TO GET the objects from the Conservatory roof, MERGE the first part of the program, then CLEAR 32767: LOAD "" CODE. When this is loaded type in POKE 60231,0: POKE 42183,11: POKE 56876,4. The new version can be saved by SAVE "Jetset" line 10 *SAVE "JSW" CODE 32768,32768* GO TO 40. As there was a code in *Manic Miner*, there is also one in *Jet Set Willy*. Go to the first landing and enter WRITETYPER and enter combinations of numbers to travel between rooms.

DAVID MAHON,
SWINTON, S. YORKS.

JSW Tip 2

FOR ENDLESS lives, follow thusly:

Type MERGE "". Stop the tape when 0 OK, 0:1.Type ll (so as to clear this line). Type in this line: 35 POKE 35899,0. Now start the tape again.

To disable the ATTIC and BANYAN TREE bugs (This enables you to get to the right hand side of the Banyan Tree) follow these instructions:

Merge the program as above. Now type CLEAR 32767. Type LOAD "" CODE. Start the tape again and let the program load. Once loaded enter: POKE 60231,0: POKE 42183,11: POKE 59901,82 :POKE 56876,4. To play, enter "GO TO 40".

BILLY ARMSTRONG,
Sligo, N. Ireland.

● And now some *Football Manager* freaks . . .

ZIT DANDRUFF — J'ACCUSE

So Zit Dandruff knocks the Spectrum, eh? (Issue #4). He really has no right to call himself a Computer Snob. Unless the word Snob has changed its meaning from "One who looks down on those he considers his inferiors" to "One who is a wally". Colour and sound? The BBC can only rustle up eight colours. And as for that pimple of a speaker! Three sound and one noise channel, with a feeble eight bit control! It's just not good enough.

But then he just has to look at the beast to know that he's buying the Cortina of the computing world. What a disaster!

If Zit Dandruff immediately purchases an Atari, he may yet be able to hold up his head at the golf club. Okay? Yah!

Incidentally, the Atari book you should have recommended to A.C. Lowe (issue #4) is 'Your Atari Computer' by Ian Poole (published by McGraw-Hill). This book is neither boring nor O.T.T. It covers both elementary and advanced Atari Basic, as well as most of the pre-XL hardware.

CHRIS BONE,
Watford.

● Er . . . and which machine do *you* like, Chr$?

Slug Slams Pirate Myth

Come off it! The software houses aren't starving yet. And don't give us the rubbish about piracy losing the industry x zillion quid last year. You know as well as I do that these figures are totally spurious, based on the assumption that everyone with a pirated copy (where does this "seven pirate tapes for every one legit" come from?) would have bought a copy of the real program. What nonsense — apart from the fact that the dross, and most of the punters (i.e. the kids) are on fixed incomes, either pocket money, weekend earnings (or like myself — the dole) and could not possibly afford anymore than they buy already.

This letter will probably be treated with a snide aside underneath the missive — but don't forget, we've sussed you.

THE WERESLUG,
Gastropodsville.

● Forget all that — tell us how you came to be called 'Wereslug'.

● And now some *Football Manager* freaks . . .

SCORE . . .

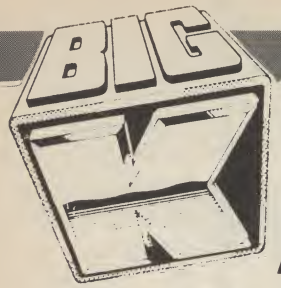
IF YOU press a key during the match highlights at the end of a particular move, the screen will change immediately and you'll get another chance to score.

MATTHEW WARE,
Norwich, Norfolk.

. . . THEN SELL YOUR TEAM!

If you want to load your chances in *Football Manager*, and don't mind a long game, sell all your team and make a lot of money. It's possible to play on and make more money. Then you can buy back your players and play on — rich!

CHRISTOPHER LUNN,
Huntingdon, Cambridge.



AND NOW HERE ARE THE WINNERS OF OUR COMPETITIONS

The results are in! BIG K's first two Big Kompetitions have been judged to be a great success, especially by a lucky few who have kopped some ace prizes. Read on, Macduff...

BIG K Coleco competition

April issue. Eight features of the Coleco Module 3 computer (Adam, to you) were listed and entrants asked to place them in order of appeal to the average home user. The judges checked out the coupons and decided that the best order submitted came from *Gary Adams of Farnworth,* who put:
1–B, 2–E, 3–L, 4–A, 5–J, 6–C, 7–K, 8–D.

Gary wins the Module 3 plus a ColecoVision video game system to plug it into. The same goes for *Geoffrey Loveman of Southampton,* who submitted the next best attempt.

Michael Hogburn of Reading carried off the second prize of a ColecoVision video game system plus Module 1 Atari

BIG K Atari competition

May issue. An Atari 800XL plus 1050 disc drive was the prize awaiting a winner in this competition. Ten questions with multiple choice answers were given. The best set of answers, in the judges' opinion, came from *Don Murray of London.* He put:
1–A, 2–C, 3–B, 4–A, 5–A, 6–A, 7–A, 8–B, 9–B, 10–A.

Don wins the 800XL and disc drive while 10 runners-up each receive prizes of AtariSoft games to run on most of the popular micros. All shoud by now have been notified of their winnings.

Big Kongratulations to one and all.

More results koming soon (doncha just love all these 'K' jokes?).

GULPO!

Back by almost no demand (especially from the BIG K staff) the Department of Unintentional Blunders rides again.

Reviews (Big K No.4, p.27). In the review of Anirog's *Cybotron* it was stated that the player was only able to fire in the direction of travel. This is not strictly true as two joysticks can be used in this game, the second giving fire in eight different directions. Nostra culpa, Anirog.

Hunt the prog (Big K No.3). Apologies to call CBM 64 owners who looked in vain for the prog mentioned on our June issue's cover. Fact is we found an evil bug lurking in that program and had to pull it out (the prog, not the bug) at the very last minute. Problem was that issue's cover had already gone to press some time before (as most covers do) leaving us helpless and red-faced. Well, it shows that we care about the listings we give you.

Commodore owners, We love hearing from you, really. But we wish it was for reasons other than problems with those pesky Commodore graphics character sets. It's finally dawned on us that what we all need is a totally inklusive, kompletely komprehensive BIG Katalog of Kommodore, sorry, Commodore, Graphics.

NEXT MONTH IN BIG K...

Ever bought a game that's not as good as its box?

Everybody has seen the home computer game packs that sparkle with imaginative colour and graphics, and lure buyers into the store.

Sadly, some who have bought have found that the game sparkled less than the box. For, as more and more companies jump on the home computer bandwagon, it becomes ever more likely that most of the imagination and excitement is concentrated in the pack. Instead of playing a fast game, you lose a fast buck. Or, more likely, several.

Yet games have become increasingly sophisticated. Scenarios are more varied, levels of play have been increased, and high resolution colour graphics capabilities are being used together with dramatically improved sound effects. The trick is to know which games are as good on screen as they are on the pack.

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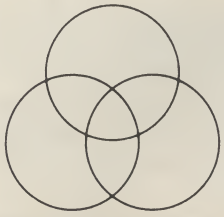

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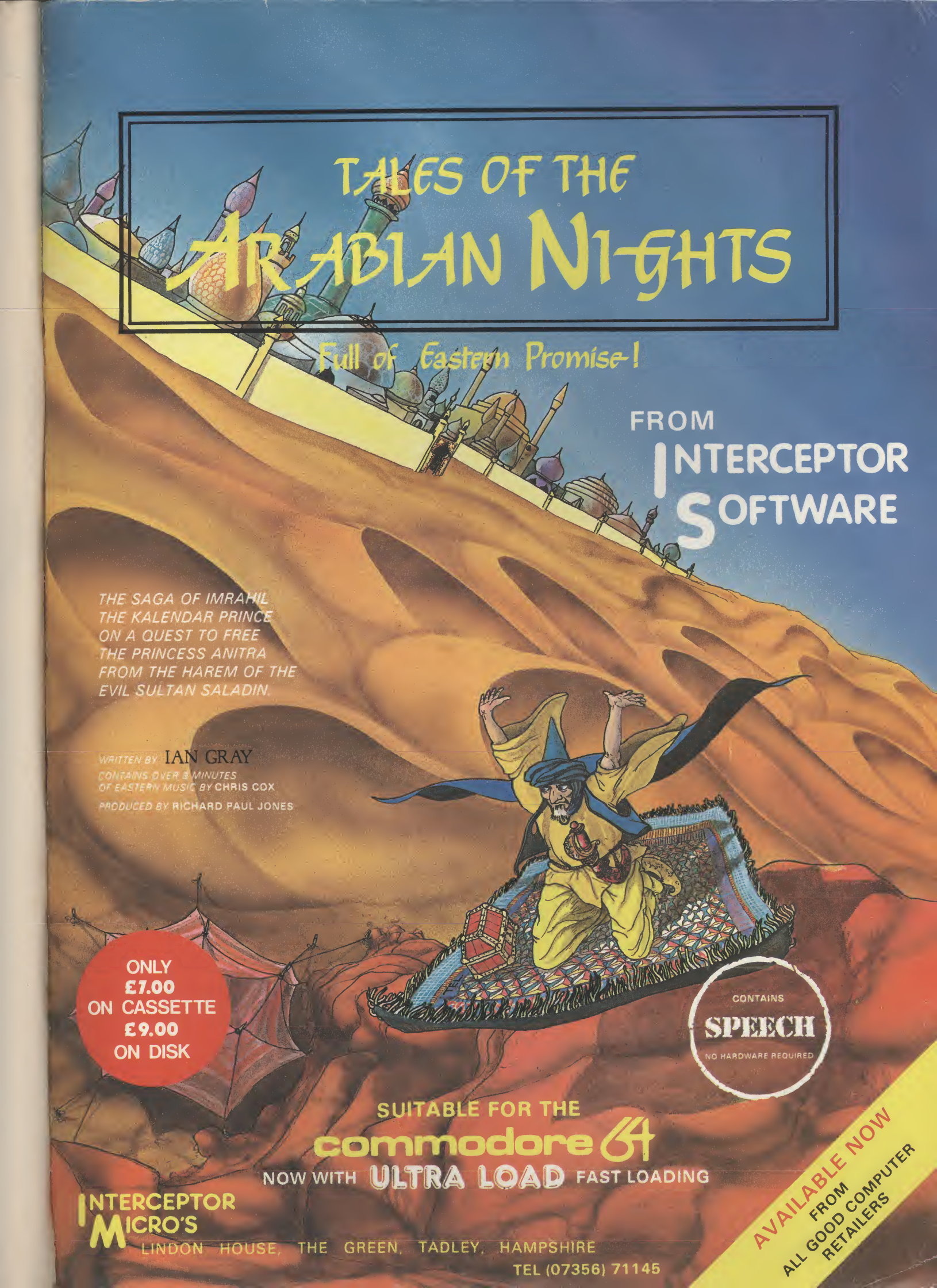
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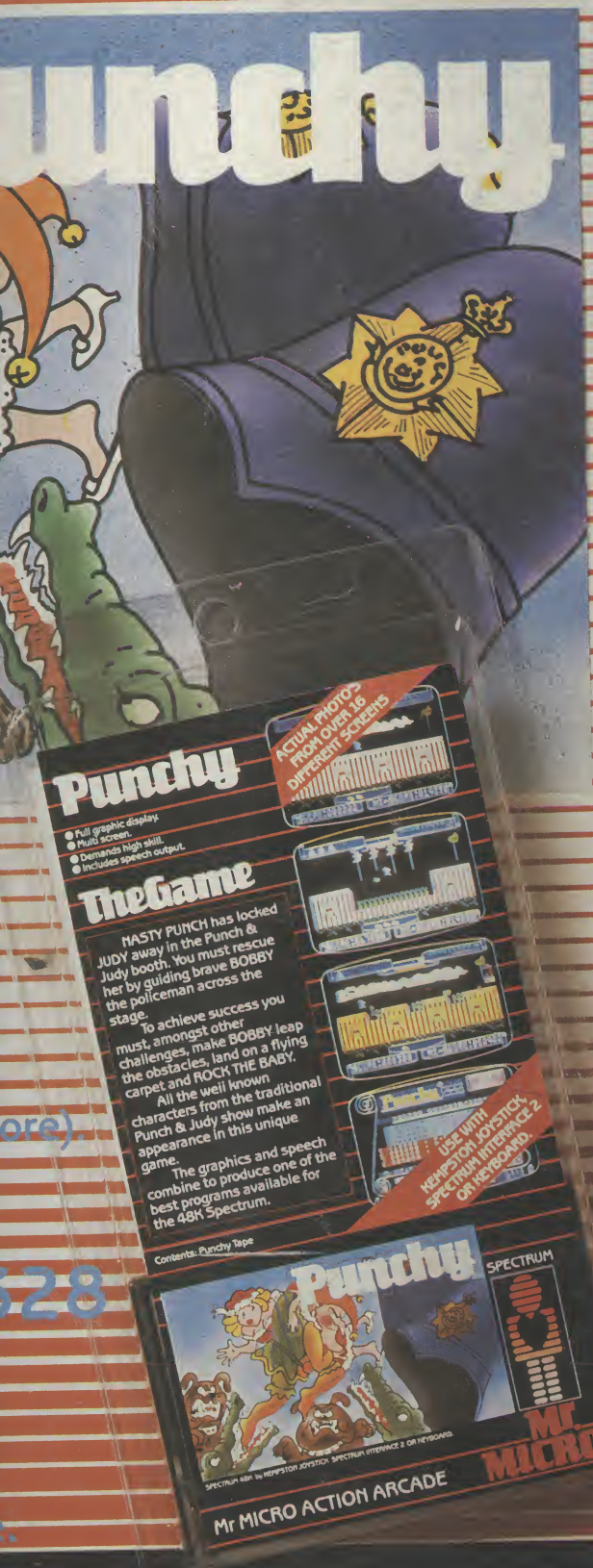

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SEPTEMBER 1984

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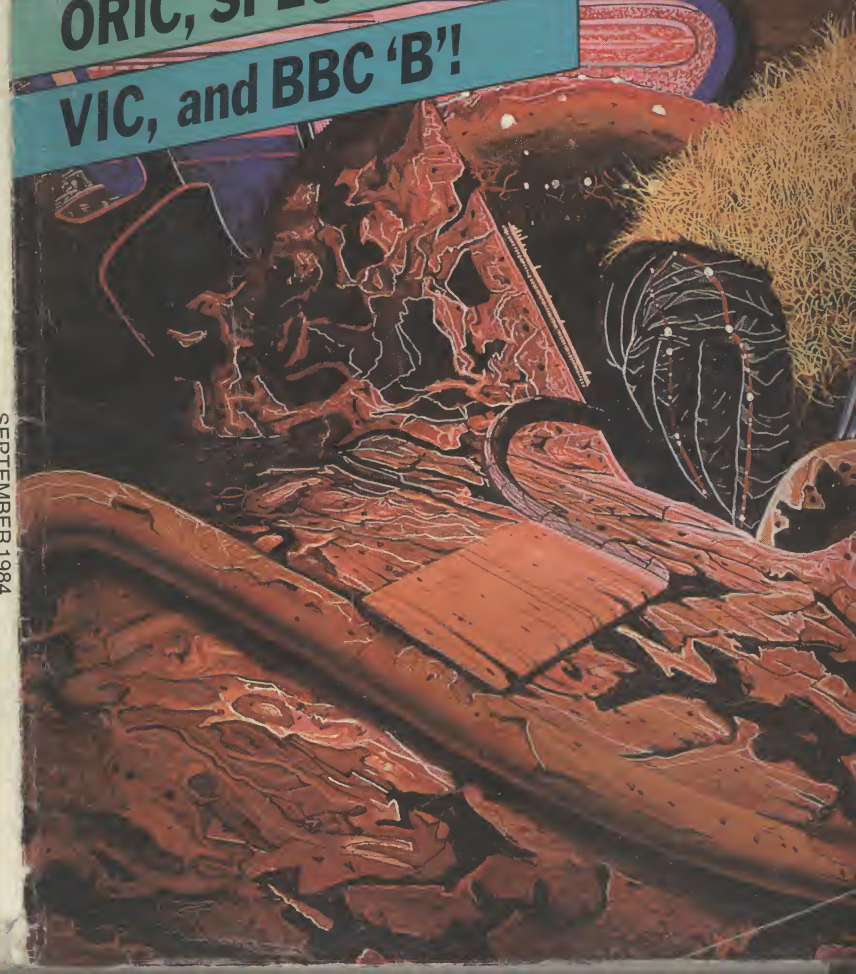

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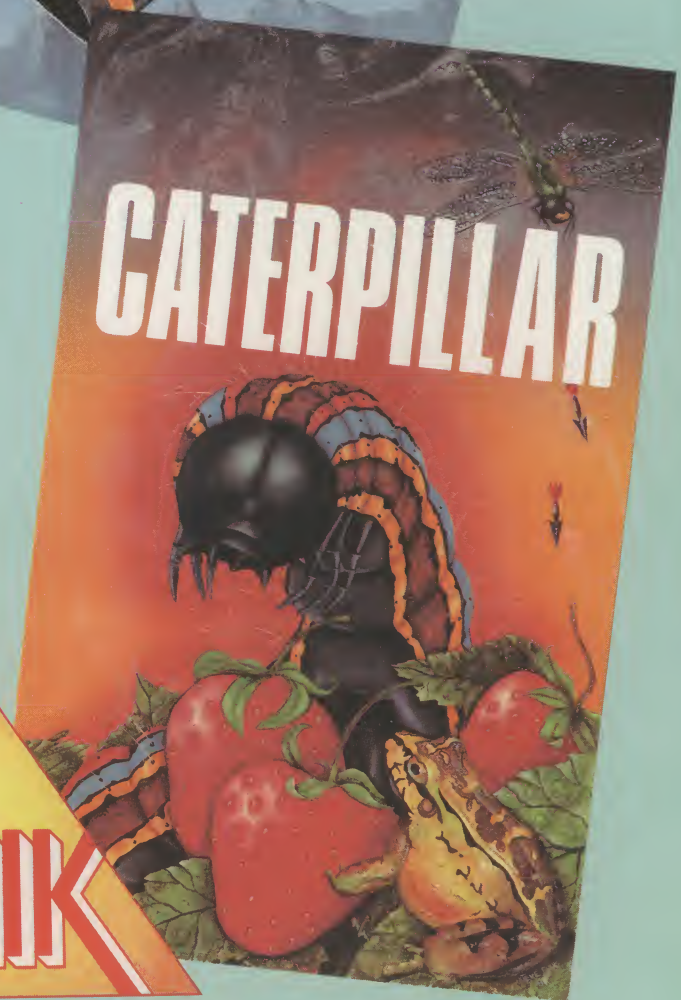

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BAM AND POW — MEET ZAP

LOVE THEM or loathe them, comics have been part of British society for well over 100 years. At worst they are mildly entertaining, at best a creative art form that is acquiring an international reputation, bringing fame to the writers and artists of the medium. Much like the computer game biz — only things seem to be happening a lot faster there.

There is a more common link between the two worlds — imagination. Without it comics couldn't exist and computer games would still be at the level of Nolan Bushnell's 'Pong'. It was only a matter of time before the two media formed a more physical bond. That time has come and this issue BIG K take an exclusive look at the making of two games based on the 2000 AD character, *Strontium Dog*. Continuing the theme, Steve Keaton examines the latest manifestation of some American comics characters in the computer game world.

Meanwhile, our popular and oft-quoted review section continues its renovation and our ratings system completes its revamp. Now the important overall K-rating can be clearly seen on the top line of each review with the individual category ratings in their usual place below the review.

Our Charts page also undergoes a significant facelift reflecting the domination computer games now hold over the whole recreational software market.

As always we welcome your comments (and H. Polipp-Hughes of Grantham is welcome to collect his brick at any time) on BIG K or computer life in general.

RICHARD BURTON

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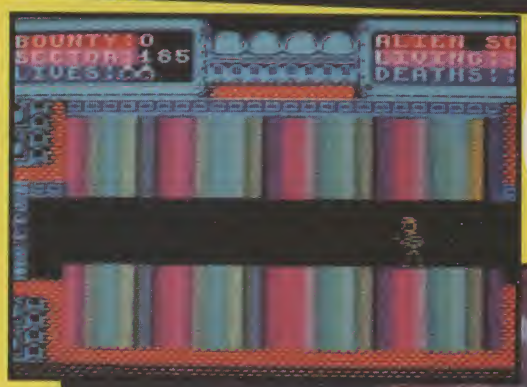

TRIED & TESTED BIG K GAMES

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BIG K

GAMES TO BEEP OVER /
UTILITIES TO WEEP OVER /
for Spectrum, BBC, CBM 64,
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No. 8 NOV. 1984 85p

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A TALE OF TWO BOUNTY-HUNTERS...

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Stuntware: Fall Guy Falls In

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SAMURAI SOFTWARE

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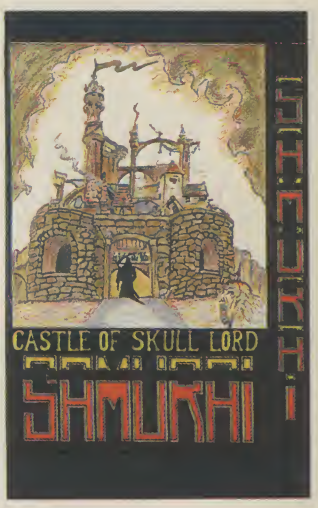
Packaged in a Special Presentation Box which includes a "Free Dust Cover" for your computer.

In a battle lost in the mists of time, the necromantic Skull Lord attacked and defeated a race of noble Dwarves. The Dwarves lost many treasures, the most valuable of these being the "Crown of Dwarves Kings". For many ages did they attempt to regain this artifact, and for many ages did they fail.

Now in desperation they call upon you, noble warrior, to attempt that which is beyond their power.

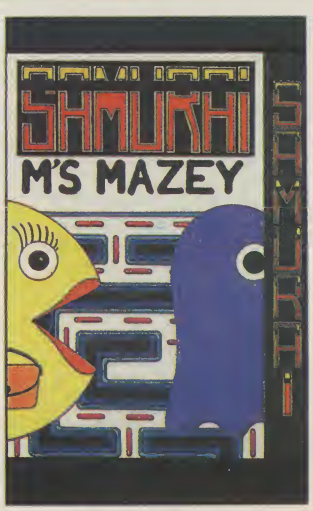
Your quest:— To regain the fabled crown and defeat the all powerful skull lord.

The adventure is of the classic format. Simple verb-noun combinations are expected, and will usually be understood.



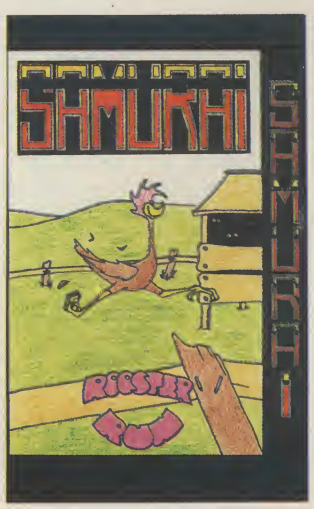
Samurai Invaders

You control a fearsome Samurai warrior whose aim is to prevent the Alien invaders from gaining control of the earth. To help you in this task, you are armed with shuriken, fearsome oriental throwing stars.



Ms. Mazey

Can you guide the intrepid Ms. Mazey around her garden maze and collect the daisies? Or will you fall victim to the evil skull riders? (In a garden?) Can you make it to the magical "flower pills". Will you get the "flower power" to zap the skulls? Will Ms. Mazey ever get to see the flower of her heart, Percy Chucka?



Rooster Run

Why DID the chicken cross the road? You don't know? Neither do we, but with the help of this game you may just find out! Your aim is to guide the hapless rooster across the road, then, get in the boat and avoid the aquamarine hazards. What could be simpler?!

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FLARED JEANS FIASCO COMES GOOD

"Y'SEE, TERRY, it's like this.

"There I was, having a quiet vodka slimline in the Winchester, with Dave giving me GBH of the ear'ole about me slate, when in walks this geezer — lovely suit — said did I want to come in on a nice little earner?

"Well, you know me Terry, never miss a trick, so naturally I asked 'im what he was on about. It only turned out he was into this computer business. Now you know me, Terry, always one for high technology — remember them calculators? So the geezer says he's from . . . got the card 'ere somewhere . . . DKTronics — strange name — and would I sign on the dotted on account of he and some other geezers 'ave made this video game based on, wait for it, you and me, Terry!

"So we did a deal there and then and the result is, you're in, my son, to the tune of . . . er . . . half a monkey. Well, twenty quid. No, don't thank me, Terry.

"Anyway, after 'e'd gone I got onto Cutglass Tomkinson, the one 'ose brother is doin' four years in Brixton for video piracy. 'E 'ad this load of computers, so I bought the lot. Cutglass reckons I can shift 'em for an easy two hundred a time. Jupiter Aces, they're called. What do you think of that?

"Now what I want you to do for me Terry is this . . ."

MINDER, from DK Tronics, by agreement with Thames TV, is on the CBM64, Spectrum, Amstrad and all MSX machines. It sells for six sovs less five pee.

COMPUTER ART — *NICE WORK IF YOU CAN GET IT . . .*

. . . AND UNEMPLOYED graduate, Hugh Riley, certainly intends to do just that! He recently beat off all-comers in the Commodore International Computer Art Challenge to carry away as first prize .. a £1,500 goodie-bag of computer equipment, plus the BIG ONE . . .

To wit, a £5,000 educational endowment from Commodore to study computer art anywhere in the world (anywhere? How about, oh, Bali?). Inspiration for the screen scene that earned its creator his jump-jet dream ticket away from the dol'drums' of life in Crumpsall, Manchester was provided by 31-year old Hugh's baby son.

However, though his entry — entitled cryptically enough *Louis (Meditation Failure 126) And Obsessiveness* — may have been triggered by kid Louis, this art belongs to daddy! (You're fired — Ed.)

With the academic world now his graphic oyster, Hugh is in no great hurry to make a final choice of temporary residence, but hot favourite for the honour is (con) currently Ohio State (University), USA.

Hugh comments: "The £5,000 endowment will enable me to learn from some of the world's most renowned experts and at the same time develop techniques which will stand me in good stead when I return to Britain."

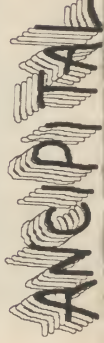
He has now sent back his UB40.

CAMEL MAN IN SHOCK NUMBER CRUNCHING ORGY

The number? 3.5 million. This, we hasten to add, is not exactly the income of Jeff Minter, ace programmer, bearded supremo of Llamasoft Ltd. No, it's actually his personal beast score on his own new Commodore game, *Ancipital*.

The game is billed as being a 'Progressive Arcade Game'. This seems to mean that it's a very detailed arcade adventure. Features are one hundred separate screens, with a single key-press HELP facility for each screen. Minter himself claims to have solved only 89%.

Next big question is, does it mean a break with the tradition of furry ungulents — camels, sheep, llamas etc. Surely it can't all end here, with the world's wildlife still unexploited.



FROM UNDERWEAR TO . . . SOFTWARE

SPARKS SEEMED to be flying when BIG K phoned the head office of a certain well-known high street store the other day. We'd called to gen up on reports in the Sunday press that Marks and Spencers (these well known purveyors of foundation garments and accessories) were moving into the computer softwear (sic) business.

"Nothing further to add to the newspaper reports, which are basically correct." Press officer Tony Kelly sounded suitably cagey. "We've a good idea who let this story out, but I'd rather not go into that now." The secrecy surrounding these games scheduled to hit the streets at about the same time as this issue of BIG K — seems perhaps a little unnecessary.

Be that as it may, beyond the facts that three titles will be on sale (*Games Pack, Start to Program* and *Games Maker*) in six major stores retailing at £6.95 each and available for the Spectrum only, we are unable to reveal any more details.

MARATHON MEN

CHARITY begins in Bridlington, or so 18-year-old Sean Sullivan and 17-year-old Paddy Bell, who set out to create a new world record in non-stop computer games recently, have reason to believe.

They believe they achieved this record, although their feat won't feature in the *Guinness Book of Records* which refuses (so far) to provide a category for continuous software playing.

Both youngsters were sponsored for the marathon and to date in excess of £500 has been raised for the Kingfisher Trust whose aim is to set up a centre in Bridlington where young people in the town, especially the unemployed, can use their spare time to good effect, developing skills and leisure pursuits.

Paddy managed a 30-hour stint at the keyboard; Sean went on for a staggering 50 hours, but we on BIG K have come up with a title which we dare anyone to try for more than fifty seconds at a time, let alone 50 hours. To wit: *Cuthbert Meets The Thing From The National Coal Board.*

WORLD WAR III NOT GOOD FOR MICROS — OFFICIAL

SHOULD the Pentagoths and Kremloids ever get round to dropping The Big One, the drab post-war existence (for those of us who live through it) will not be lightened by the odd bout of Adventure or Arcade hacking.

Apart from the need for a wind generator or some other alternative energy source, there's EMP to contend with. Electromagnetic pulse, to give the monster its full name, is a huge electrical overload caused by a nuclear blast. The effect, even from a relatively low-yield weapon, would be felt up to 600 miles away. Microchips just can't take it, and the whole lot would go down the tube.

The surprising thing, defence analysts revealed this week, is that military computers and radar circuits are not shielded from the effect. Since modern technowar depends heavily on computerised command and control, this could mean the ridiculous spectacle of NATO and the WP fighting each other very quickly to a standstill in the radioactive ruins. Nice to know you're in the same boat as a five-star general, eh?

STAB

YOU DON'T need a modem and a phone for Cases Computer Simulations, *The Prince,* a multi-user adventure for the Sinclair based on the 15th-century best-seller written by Machiavelli. This one's getting the 1984 Cambridge Programming Award, and is set in Macho's world of Renaissance intrigue and counter-intrigue. Each player is given a password, and the others must leave the room while he or she plays. But watcha youra back, Renaldo, and don'ta crossa upa da Machiavelli boys, O.K? Or tonight you sleep wid-a da fishes.

The [illegible] has doubled its selling space in home computers in 280 of its high street stores, and taken on 120 additional computer consultants for [illegible] outlets.

In another development British Telecom will sell computer games to most leading high street retailers this autumn at about a third of the price (£250) for which they are normally sold. The corporation launched a cable television venture Gamestar, but has decided to capitalize on its efforts in high street because of the sluggishness of cable.

THE TIMES
SEPTEMBER 21 1984

IT'S FOR YOO-HOO

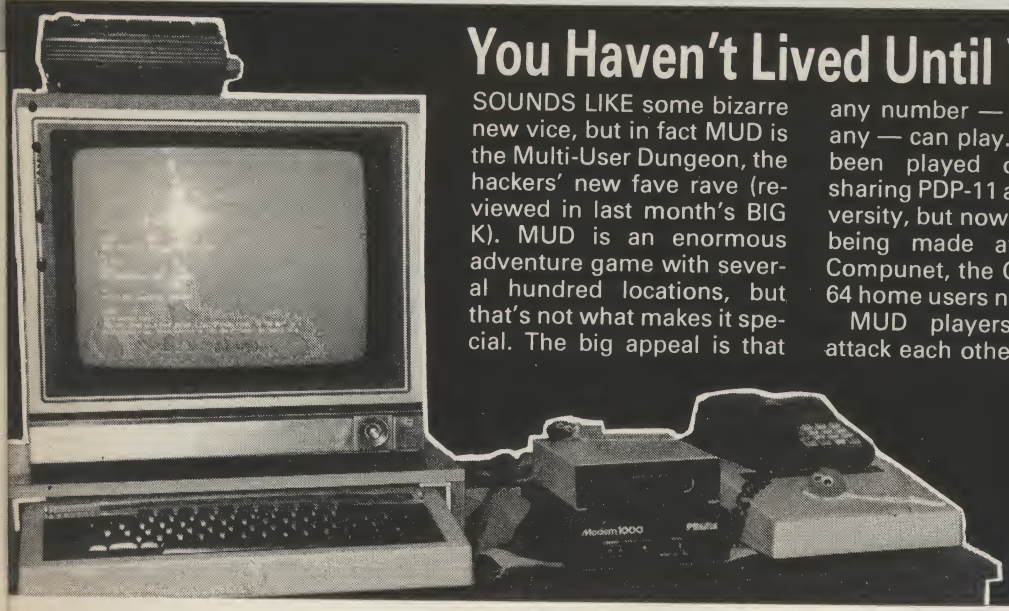
"ULLO, 'ULLO, Buzby here. I'm ringing to canvass for support. Save Buzby's Beak, the cry goes out — and for why? 'Cos dark deeds are afoot. Rumours abound. Word is that I'm not considered hi-tech enough for the official dog and bone brigade.

"Worse still, I've heard that there's a rival homing in on my patch. This hot chick goes by the name of *Firebird,* so I've heard. A souped-up winged warrior of the airwaves that's set to boot me into extinction. Well, not without a fight, I say. Let me tell you, I may not be fast, I may not be sleek and aerodynamically A1, but I'm famous and I'm lovable and I'm cuddly and . . . SQUAAAWWLKK!"

Right. End of space-filling fantasy. On with the news. *Firebird* is seen as Buzby's alter-ego, and is in fact the nom de *plume* (geddit?) of (wait for it) A New Range Of Computer Software currently being put out by those dedicated people who gave you: "Outer Mongolia? But I was dialling my Aunt Doris in Dorking!" Viz, British Telecom.

The BT man-on-the-phone, was at pains to stress that the aim of *Firebird* is to provide open, honest, value-for-money products. To this end, box illustrations have been replaced with screen shots — "What you see is what you get."

Their initial launch of twenty titles, across the range of BBC, CBM 64, Spectrum and Vic 20, are aimed at pocket money punters, and retail at £2.50 each.



You Haven't Lived Until You've Died In MUD . . .

SOUNDS LIKE some bizarre new vice, but in fact MUD is the Multi-User Dungeon, the hackers' new fave rave (reviewed in last month's BIG K). MUD is an enormous adventure game with several hundred locations, but that's not what makes it special. The big appeal is that any number — well almost any — can play. To date it's been played on a time-sharing PDP-11 at Essex University, but now the game is being made available on Compunet, the Commodore 64 home users network.

MUD players can talk, attack each other, give each other help, all within the adventure universe.

As you gain skill you get to be a Wizard or Witch, and there the sadism really starts. These elite *übermenschen* can use the command 'SNOOP' to watch what other players are doing, torment them, or (some chance we'll bet) give them useful tips. The headline is a quote from an actual player, so watch your sanity! For those prepared to risk it, MUD is to be launched at the beginning of October by Century Communications.

Use 'Smart Milk' To Destroy Alien Biscuit — OK?

SEVEN THIRTY! As you spoon your morning nutritional intake of protein-filled, milk-and-sugar-covered crumbly stuff mouthwards with one hand, you can now use the other to control the antics of Dunk, Crunch, Bixie, Brains and Brian — okay? If you can keep those bleary, morning-after peepers firmly fixed on your monitor screen then you could be game for the latest offering from a certain mecca of brekker — *Weetabix versus the Titchies* is here for your delectation.

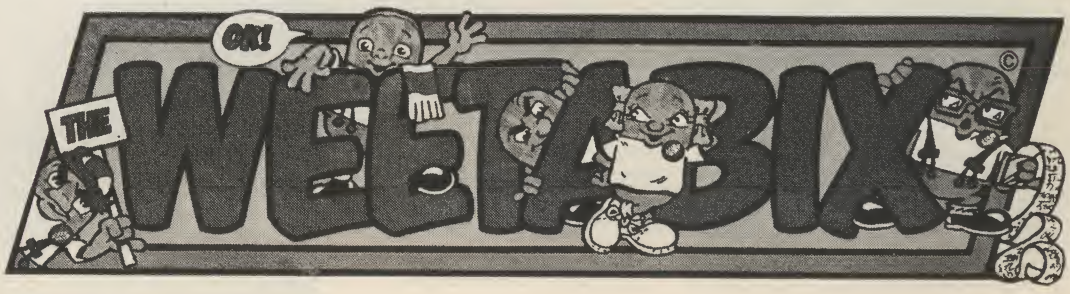
As part of a mega-million pound campaign, Weetabix's promotional consultants — Clarke, Cooper — have joined forces with software producers Romik to put out what they claim to be the first-ever promotional computer game.

At the time of going to press, the first packets of these compressed, wheat-based nutritional units with the software hard sell emblazoned across them are winging their way to the shops. The game is only available from Weetabix and retails at £3.75 for those minor mortals not members of the Weetabix Club. Clubites can buy it for a whole pound less. Wow.

Both Romik and Clarke Cooper Ltd would appear to be squirming with excitement at the possibilities of this giant step for bran-kind.

It remains to be seen whether the punters consider this arcade-style shoot-'em-up to be in the best possible taste.

Today the breakfast table, tomorrow — Hollywood? Are we en route for *Weetabix: the Motion Picture.* And who controls the cereal rights?



GARBAGE IN GARBAGE OUT

by The Shadow

You Gotta Be Crazy To Want This Kinda Publicity Part 76: You are looking at the new vital nerve centre of one of the UK's most prestigious games software companies. No, you really are. It's just that the builders haven't moved in yet. Official sources tell us that the scaffold and ladder are for real-time storyboarding of an exciting new range of Kongalikes, while the skip is where the unsolds go. The barrow is for the managing director to take home his paycheck. The company? That would be telling. Oh all right — their Chairman Reads The Guardian. And has a beard. OK?

The **Imagine** saga goes on (yawn) and on: rumours that not one but five games houses are rising from the ashes — but no place seemingly for mega-being **Eugene Evans** . . . hope he saved some of the hard-earned . . . However **Mark Butler** reached shore OK, clinging to an oar, thanks, and can now be found — along with **T. Best** — in dad's firm **Voyager** . . . Said Best Man, meanwhile, keeps mysteriously ringing up the Tower of Power offering what he calls "the real story" on **Imaginopossessions** . . . Sorry, **Tim,** got to invoke the fifty-year rule on this one . . . Fellow Liverpudlians **Software Projects** have meanwhile taken on most of the redundant Imagihackers, who by now (the **Shadow** assumes) know all about The No Possessions Syndrome . . .

All together now, an' let's sing dat ole *QL Blues: "Woke up dis mornin', got het up with my microdrive/It done occurred to me, dis keyboard is just so much jive/Wid'no game software comin', can dis' highly-rated, long-awaited, ex-communicated, exasperated, customer-disorientated machine survive? (Oh yeah)"*

Never mind Making It How Do You Add It Up When You've Got It? . . . Unperturbed by a recent ROM failure with their *Organiser* the lads at **Psion** have found a new use for the tiny computer: Doctors in family planning clinics will be advised about the effects of different kinds of contraceptive pill in a special ROM pack . . .

Lastly, which well-known person non unconnected with the computer industry deep in the heart of Silicon Valley (hedge, hedge) got busted by the LAPD (Dets. **Hutchinson, Starsky)** unloading Olympic Games freebie tickets to eager punters for Large Sums Of Money? Can [Deleted]'s business really such bad shape? **The Shadow** knows, for he walks by night — when everybody knows the idiot should be getting some Zs like the rest of us; the poor old boy looks clapped out these days . . .

IS THIS A KEYBOARD THAT I SEE BEFORE ME?

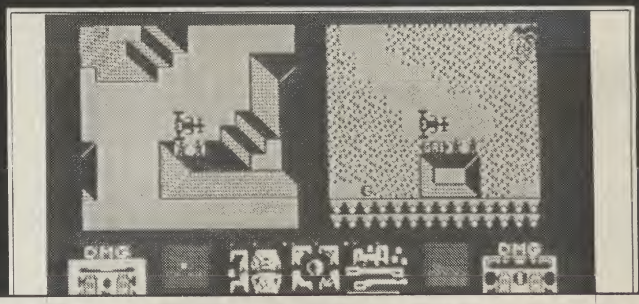
OR IS IT something entirely new? The first adventure game scripted by talented newcomer to the micro scene Bill Shakespeare arrived this month. Marketed on his behalf by Oxford Digital Enterprises, it's an interactive version of the doom-laden and angst-ridden **Macbeth.**

Academic pursuits may well throw up their hands at this one. After all, how can it still be **Macbeth** ***when the player can alter the entire plot by either being inept enough to get caught red-handed cutting King Duncan's throat, or alternatively by seeing off the vengeful MacDuff at the end thereby ensuring continued occupation of the Scottish throne?***

But ODE have done their best to sidestep any accusations of "trivialising". The cassette comes complete with a 174 page book containing a copy of **Macbeth,** ***plus lengthy notes on the action.***

The game itself is a biggy. The play's split into four separate adventures, and there are plenty of graphics screens. The key to solving **Macbeth** ***seems to be an aptitude for elaborate word-play. Very Elizabethan. However, a quick look-over suggests that it may not be that easy. Each game segment is ominously followed by a psychoanalysis program. Is it all a plot by Oxford dons to drive the punters mad? Is there a KGB connection?***

The public should be told.



TEMPESTUOUS ORIFICE TAKE BRONZE!

STRANGE HINTS of abominable rites and unspeakable practices have emerged from Games Workshop, organisers of *Games Day '84.*

Down at the Royal Horticultural Hall, massed hordes of game-crazed death fanatics queued up to participate as the character of their choice in any one of 50 simultaneous role-playing games. The mind cannot grasp the awesomeness of this scenario.

For those of us not hip to the genre, we speak not of computer games, but of extended psycho-dramas involving up to twenty real physical-type people. (Liveware.) Instead of the computer, one player, the Dungeon Master, oversees the characters and their world. Which brings us to the Games Awards. Plenty of these, twenty-six categories in fact. The best new role-playing game is predictably called *Middle Earth,* but we are pleased to note that the original and totally scrotnig *Judge Dredd* was the subject of the No.1 SF Board-game. Most enigmatic award — the third prize for games fanzines — went to the exotically titled *Tempestuous Orifice.* If and when we get hold of a copy, you'll hear more.

It is absolutely brain-numbing to discover that this actually was the *first* Games Day — after eight years of the event — to feature computers. Where have they been? The new line may have something to do with the launch of three new Games Workshop titles. *Battlecars* (see pic) is a sort of *Death Race 2000* with heat-seeking missiles. Two mega-road-hogs slug it out with heavy weapons in a city Centre. Also coming is *D-Day,* a two-player version of the well-known war movie.

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■ If you're first to ring it, you save the world and collect the £25,000!
■ Quite a package! And to give everyone a fair chance, "Eureka!" will be released simultaneously worldwide on October 31st, 1984. No packs will be available until that date. All orders received by mail or phone by 26th OCTOBER will be despatched by post on the 31st right across the world. So order now, and be one of the first off the mark.

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DEVISED BY IAN LIVINGSTONE

The storylines for "Eureka!" are by Ian Livingstone, whose "Fighting Fantasy" books have sold over 2,000,000 copies. He's dreamed up some rather nasty tricks and twists for you in this Epic, because he has also devised the cryptic clues and conundrums in the booklet that goes with the program. He's the one who knows the answers.

"Eureka!" was programmed by Andromeda teams led by Hungarians Donát Kiss and András Császár. It took the equivalent of 5 YEARS to create, and the skills of 4 graphic artists, 2 musicians and a professor of logic too. We told them to stretch the hardware's capabilities, and make sure you were kept awake for hours!! They've done it...

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★ *The backing of our Price Promise so you can buy with absolute confidence knowing that you're getting the most from every penny you spend and the best with every pound you save.*
★ *The Club's free colour magazine showing our vast choice of programs and exclusive offers on accessories all at huge cash savings — like a superb computer Work Station for just £19.95 (£15 less than everyone else is currently paying), like top quality home computer maintenance kits at half price! The list goes on in a magazine that comes not once in a while, not every couple of months but every month, so you're always right at the centre of the action.*
★ *Programs for nine types of home computer — not just two or three — all guaranteed direct to you from the original manufacturers.*
★ *Free Software Club Vouchers every month if you're quick on your feet!*
★ *A telephone order hotline for ultra fast despatch and a Customer Service hotline to serve you better.*
★ *The knowledge that you'll be with the Club that started it all. There's only one Software Club, it's the most popular in the U.K. because it's the best — always in touch, lively and fun, that's The Software Club. The best value you can get — bar none.*

All that we ask from you in return is that you buy just six programs (in addition to your three half price selections) in your first year of membership. You'll be spoilt for choice and if you're anything like our current members you'll want a lot more than this anyway and our affordable prices make it all possible. You can buy your chosen programs spread over the year or all at once — it's entirely up to you — and remember, it's all backed by our price promise.

In line with Club policy, postage and packing costs are kept to an absolute minimum and are free on many orders. Once your membership is accepted, p&p on orders for two or more tapes is absolutely free and virtually all accessories are also sent p&p free — p&p is only charged on orders for single programs at a rate of 41p.

The Club's free monthly magazine — packed with bargains

OUR PRICE PROMISE

Start off by choosing any three of these 49 titles for half price. All you then have to take is another six programs at prices well below retail in your first year of membership. If you find you could have bought the nine titles you choose elsewhere for less, at the same time as you bought them from the Club, we will gladly refund the difference. You can't lose with The Software Club!

REMEMBER SEND NO MONEY NOW

Although we don't list Amstrad titles in our half price offer, programs for the Amstrad are available at big discounts through the Club.

THE SOFTWARE CLUB

CHOOSE ANY THREE FOR HALF PRICE

SPECTRUM

	Rec. Retail Price	You Choose at Half Price	Item Code	Software House
Ad Astra	5.95	**2.97**	06360	Gargoyle
Can you survive in deep space against the deadly phasers of Pirat Battlecruisers and Robot Scout Ships, scatter bombs, and the almos impenetrable curtain of lethal mines.				
Blade Alley	5.95	**2.97**	04340	PSS
Six different screens of incredible arcade action featuring Saucers Asteroids, Tie Fighters, Space Hoppers, Banking Spaceship and movin 3D Scenery.				
Crusoe	6.00	**3.00**	07750	Automata
Shipwrecked and stranded on a remote island with nothing but an empty stomach, a bottle of granny's patent elixyr and the clothes he stands up — your job is to return Crusoe home again				
Micro Olympics	5.95	**2.97**	07070	Micro-Mus
Game description as for Commodore 64				
Moon Alert	5.90	**2.95**	05840	Ocean
Emergency! Battle across the rugged lunar terrain from the wreckage of your Space Fighter back to the lunar base. Scrolling landscape covers over 300 screens!				
Moon Sweeper	7.95	**3.97**	10420	Cheetah
You command the Moonsweeper Raider on a deadly seek and fin mission for stranded lunar pioneers. There are four moons to search guarded by hostile Base Carriers, Short Range Interceptors and Dea Towers.				
Olympimania	6.00	**3.00**	04080	Automata
Starring the Piman in five different Olympic events with a difference who let those alligators into the swimming pool? Features Lurch the Offic Parrot, Mutant Trees and many more surprises				
Special Operations	5.95	**2.97**	09790	Lothlorien
Superb graphics adventure war game — features 18 different maps, pl maps for resolving skirmishes with enemy patrols, and seven differe levels of play each with a different objective.				
Trashman	5.95	**2.97**	04290	New Ge
Empty all the bins from each road into the dustcart in a race against yo slowly reducing score, get more points doing jobs for householders b step on the grass and you'll get bitten by their dogs and end up with a — watch out too for cyclists and cars!				
War of the Worlds	7.95	**3.97**	06260	CRL
Based on Jeff Wayne's Musical Version of the H.G. Wells classic. You li in a world under Martian domination — you must survive against the ter of their Fighting Machines and weapons of death.				

ORIC

Chess	9.50	**4.75**	06950	IJK
Quite simply the best version of the game available for your Oric w variable skill, care, sub and speed levels . . stuck? the computer w suggest a move — just one of the many features of this superb progra				
Digger	6.95	**3.47**	06540	Lothlorien
Fast and challenging — deposit sacks of gold in your bank while attemp ing to kill all the monsters on the screen before time runs out.				
Ghostman	7.50	**3.75**	07460	Severn
Control your Ghostman around the Maze eating the dots and fru avoid the Ghosts who are out to get you. Find the Power-Pills in th corners of the maze and you'll become temporarily invincible. Nine level each one faster than the previous maze!				
Lone Raider	8.50	**4.25**	03150	Severn
For eons Earth's Battle Fleet has held back the alien Zugs. As Captain the Lone Raider you must breach their defences wreaking havoc on y way to their Mother Ship.				
Trick Shot	7.50	**3.75**	06970	IJK
You have to pot the balls in the pockets by lining up the cue and hitting t cue ball with just the right strength — it's highly realistic and each ball a pocket combination scores differently.				

DRAGON 32

Chuckie Egg	7.90	**3.95**	02300	A&F
Game description as for Electron.				
Don't Panic	5.45	**2.72**	09360	Peaksoft
A great double bill . . . Towers of Death and The Ice Kingdom are t classics that should feature in every collection. But miss a vital clue a you could be playing for months in your quest for the treasure.				
Photo-Finish	7.95	**3.97**	09330	Peaksoft
Superb real-time graphics, authentic race-cards showing previous fo odds based on actual form, races from 5 furlongs to 2 miles, timed resu and a photo-finish feature! For 1-4 players.				
Project Volcano	7.95	**3.97**	07530	Mission
A top secret missile command centre has been discovered in an extin volcano on the Yugoslavian border. It's the heart of a network covering whole of the Soviet Block — your job is to neutralise it.				
S.A.S.	6.95	**3.47**	09350	Peaksoft
You'll be briefed on your mission and then, equipped with helicopt gunships, wire guided missiles and grenades. It's up to you. There night action feature and nine minefields just to liven things up.				

BBC B

	Retail Price	Half Price	Item Code	Software House
Biagger	7.95	**3.97**	04880	Alligata
Game description as for Commodore 64.				
Chuckie Egg	7.90	**3.95**	02540	A&F
Game description as for Electron.				
Mr Wimpy	6.90	**3.45**	07170	Ocean
The zaniest, craziest burger battle to sizzle your screens! Fight Waldo and the rebel ingredients to make your delicious Wimpy Burgers the best in town.				
Spitfire Flight Sim.	7.95	**3.97**	05990	Alligata
Take off, roll, loop-the-loop and landing must be performed with complete accuracy or your flight will end in disaster — this will have you glued to the screen for hours				
Uncle Claude	7.95	**3.97**	07480	Alligata
It's workers against bosses because the Union suspects that Uncle Claude (the electronics magnate) is about to lay off the workers. They elect you, Micro Micky to foil this dastardly plan.				

ZX81

	Rec. Retail Price	You Choose at Half Price	Item Code	Software House
Cassette 50	9.95	**4.97**	07700	Cascade
The title says it all because this program has 50 great games on one cassette. We don't have space to list them but they're all here maze, arcade, missile, tactical and logic.				
Football Manager	5.95	**2.97**	01470	Addictive
Captures the real life drama and excitement of the game transfers, full league tables, injuries, promotion and relegation, FA Cup, seven skill levels and much more.				
Krazy Kong	3.95	**1.97**	01590	PSS
Climb the pyramid knocking out the supports for the giant gorilla as you go, meanwhile dodging the barrels and rocks he drops on you.				
Pilot	5.95	**2.97**	01530	Hewson
Take the controls for a night flight, navigate by beacons using the instrumentation, take off, climb, bank left and right, descend and land — you'll learn to master them all.				

JOIN THEM And start by choosing any three games for half price

(plus p&p)

THEN GO ON TO MAKE HUGE SAVINGS ON AROUND 400 OTHER TOP TITLES EACH MONTH

COMMODORE 64	Rec. Retail Price	You Choose at Half Price	Item Code	Software House
Android 2	6.90	**3.45**	07160	Ocean

You are the Android — stop the advance of the Millitoids, survive the Maze of Death, rationalise the Paradox Zone and cross the Flatlands — but beware the lethal hoveroids, bouncers and landmines.

Blagger	7.95	**3.97**	05510	Alligata

Follow the exploits of Rodger the Dodger, master burglar, through banks, shops and houses — but watch out for alarms and very spooky night-watchmen

Son of Blagger	7.95	**3.97**	05520	Alligata

You've polished your skills on Blagger, now put them to the test with his son — Slippery Sid's not after money espionage is his game.

Caveion	6.90	**3.45**	05860	Ocean

Enter the castle stronghold at your peril! To rescue Guinevere you must ascend six awesome levels dodging and battling the deadly knights. Will the magic of the sword Excalibur make good prevail?

Dare Devil Dennis	7.95	**3.97**	06790	Visions

So you think you could be a stuntman the money is good but will you live to enjoy it — test your skills on land, sea and snow.

Hunchback	6.90	**3.45**	03750	Ocean

Rescue Esmerelda from her castle stronghold. Featuring the Ramparts, Knights, Arrows, Fireballs, The Pit and of course those Bells!

Loco	7.95	**3.97**	06180	Alligata

Through terrifying hazards and under constant aerial bombardment, this is the night rare train journey of all time — can you make it before you run out of fuel and become a sitting duck.

Micro Olympics	5.95	**2.97**	07080	Micro-User

Five track events p us long jump, high jump, pole vault, javelin, discus and hammer — you can take part in them all at the fabulous Micro Olympics.

Potty Pigeon	7.95	**3.97**	09210	Gremlin

Percy the Potty Pigeon makes suicidal attempts to build his nest by plucking twigs from the path of onrushing traffic — he has one weapon though — his revolting explosive eggs!

Snooker	8.95	**4.47**	03960	Visions

Accurate table layout, variable shot strength, spin on the ball in any direction, foul feature it's like having your own full size table but guard it or you'll never get a chance to play yourself.

VIC 20	Rec. Retail Price	You Choose at Half Price	Item Code	Software House
Bongo	7.95	**3.97**	05210	Anirog

Hilarious game for the whole family — Bongo the Super Mouse sets out to find the stolen diamonds so he can win the hand of the King's daughter in marriage.

Dungeon Droid	5.00	**2.50**	07630	Novasoft

Your Space Ship is low on Novalite fuel crystals forcing you to land on a planet whose inhabitants worship them. Brave the many dangers in the multi-level tomb before your ship is destroyed.

Mini Kong	5.95	**2.97**	01780	Anirog

Kong has abducted a young maiden and trapped her in his lair — you have to climb the ladders to rescue her as the angry Kong rains down a stream of barrels to crush you.

Flight Path 747	7.95	**3.97**	05690	Anirog

As the pilot of this high performance jet liner you must take off from an airfield surrounded by high mountains and having climbed safely over them prepare yourself for a landing in the valleys below.

Snooker	8.95	**4.47**	02170	Visions

Game description as for Commodore 64

ELECTRON				
Blagger	7.95	**3.97**	05170	Alligata

Game description as for Commodore 64.

Chuckie Egg	7.90	**3.95**	02190	A&F

Who'd think a farmyard could be so stressful? You must collect the eggs before the nasties get out and eat all your corn And if the crazy duck gets out of the cage, you're in real trouble!

737 Flight Simulator	7.95	**3.97**	06420	Dr Soft

"Start approach well out, starting down from 3000ft at 10nm range, don't forget flap and gear, aim for a 3 degree slope down to the runway, follow up with power to control speed" just one of the manoeuvres in this superb flight simulation — a real test of skill.

Guardian	7.95	**3.97**	05910	Alligata

Stop the Landers trying to capture Humanoids from your planet surface while tackling flying pods, swarmers, alien bombers, deadly baiters and a carnivorous overblown jellyfish.

Snooker	8.95	**4.47**	02280	Visions

Game description as for Commodore 64.

Guarantee

We aim to make the Software Club the only club you'll ever need to be with. All of our programs are guaranteed genuine from the original manufacturers and are produced to the highest standards. However if any tape proves to be defective please return it to us with a short note explaining the malfunction and we will replace it (or the same title) by return of post.

INTRODUCTORY DISCOUNT COUPON

To: THE SOFTWARE CLUB, PO BOX 180, ST. ALBANS, HERTS AL3 5BD

Please accept my application, enrol me as a member of The Software Club and send me the introductory tapes whose numbers I have written in the boxes below, for which you shall charge me in due course, should I decide to keep the software (plus a total of £1.25 for postage and packing). If I am not completely satisfied, however, I may return the tapes intact within ten days, my membership will be cancelled and I will owe nothing. As a member, I need not take a tape every month, if I want no tape at all, I can say so on the card provided. I will, however, choose at least six tapes in the first year. I am over 18 years of age. (This application must be from your parent or guardian if you are under 18 years of age).

My 3 selections are (item code)

Machine Memory size

Mr/Mrs/Miss/

Address

Postcode

Signature

The Red Kipper Flies at Midnight

YOU GET HOME ONE EVENING to discover a message on your answering machine. Something you'd thought hidden for good has reared its ugly head once again. Valkyrie 17 is active.

Over the next five nights a series of frantic phone calls convince you that the matter deserves further investigation. You receive a dossier on the activities of Valkyrie 17. Pieced together from fragmentary reports culled from the last forty years you slowly begin to put the whole thing together. Drakenfeur, Heinrich and Reichsmuller. The badge pressed into your hand on the station at_____. And that last desperate call for help from the Glitz Hotel overlooking Lake Bruntz.

Your cover is good. Very good in fact. You spend a few days sniffing around and then head up towards Lake Bruntz. You check in to the Glitz Hotel. It's the last lead you have. You seem to be getting nowhere.

Then on your way to the bar you sense a movement in the shadows. You feel a blow on your temple. And everything goes black...

Valkyrie 17 is an Adventure featuring both graphic and text locations. You will meet several different characters some of whom may help you while others see your demise as their sole purpose in life.

Included in the pack is a comprehensive dossier on Valkyrie 17. On the reverse of the cassette tape are the answerphone messages. And then of course there's the game itself.

LOADING TIME	**5½ minutes.**	**MICRODRIVE**	**X/FER FUNCTION**
LOCATIONS	**100+**	**FUN FACTOR 8**	
LEVEL	**?**		
SOUND	**Beep Beep**		

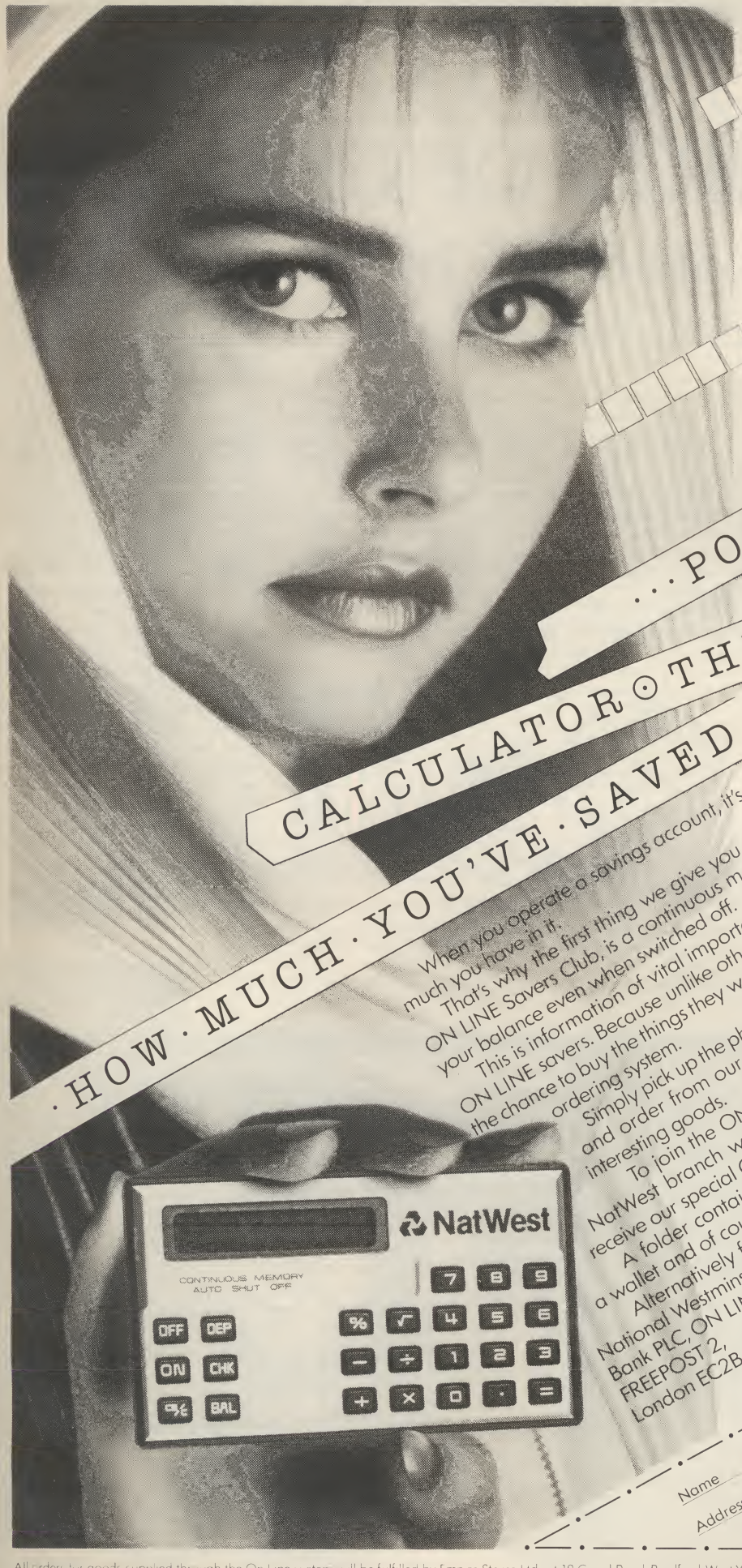
HINTS

Watch your back, try not to get killed and mind your language.

The RamJam Corporation cannot accept responsibility for injury either mental or physical caused during the playing of Valkyrie 17. Furthermore the existence of these words affects your statutory rights.

© RamJam Corporation 1984.
(Although why we bother heaven only knows).

Valkyrie 17 is distributed by Palace Virgin Gold, 69 Flempton Road, London E10 7NL. Telephone: 01-539 5566. Available from all leading wholesalers.



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NEWS feature

BUS LOAD TRANSPORTS OF DELIGHT

WELSH RARE BYTE

Cardiff's Microbus System

MICROBUS is now being launched in Cardiff. It's a computer program devised by the City Treasurer's Computer Centre to make the urban bus fleet more efficient. "All aspects of the transport system will be computerised," says Eddie Lee, Senior Administrative Officer with Cardiff City Transport. "From traffic management and engineering through to collecting fares".

All vehicles on the road are continually monitored both individually and according to their routes. Drivers are linked by radio to a control room from where the information is fed on to computer. Each journey is scrutinised in case a vehicle breaks down, in which instance a bus on a nearby route can be traced by computer and diverted to pick up stranded passengers. Mileage covered by each bus is also to be recorded, thereby enabling transport managers to observe how vehicles respond to daily wear and tear. Similarly, the computer is programmed to monitor vehicle's fuel supply and to remind drivers when re-fuelling is needed.

The Fleetguard system will encourage drivers to record the easily forgotten small defects which come to light on route — for example, a mirror out of alignment. The driver can radio the computer operator giving the bus number and detailing the work needed. The computer will then inform the engineering section of the fault — and ensure that it is rectified.

"Computers will also be used to cost and record engineering work carried out on each vehicle," says Eddie Lee. "As well as updating the bus' comprehensive life history, it will enable us to determine which make of bus is the most efficient and economic to run. Under our present manual system this is difficult to judge, but when provided with accurate data we'll be able to decide which makes should be added to the fleet and which discarded." Similarly, individual buses can be assessed. They usually last 12-15 years, and the computer is used to pinpoint which vehicles are coming to the ends of their useful lives.

Cardiff City Transport operates a fastfare system, in which drivers don't handle money, instead passengers pay their fares into a volt-slot machine. These machines are disconnected every evening so that the day's cash returns can be counted on computer. The money is then checked against the tickets used. As each ticket specifies the route and stops at which passengers board the bus, the computer also works out which stops and routes are the most popular. This ensures transport managers have sufficient data to pinpoint districts in need of more buses and to show how routes can be extended to cover new estates being built in the city's outer suburbs.

"The computer system is a means of making the bus fleet more competitive," Lee explains. "We also believe that it has marketing potential."

IOLA SMITH

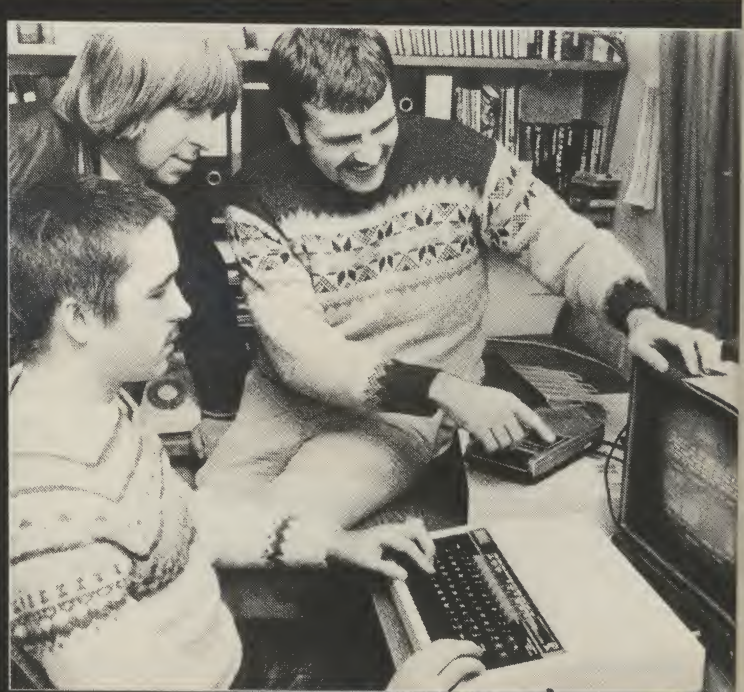
GAMES AID RECOVERY

COMPUTER GAMES have been prescribed as a new road to recovery for serious head injury victims. Burden Neurological Institute in Bristol, is a pioneer in using games as physiotherapy for the brain. Burden's patients, mostly under the age of 20, are playing games for two to three hours a day. The result is rapid improvement in memory, concentration, reasoning ability and hand-eye coordination. The very first on the programme was 18-year-old Richard Bennett.

Richard was knocked down from his motorbike by a car last October. He received serious head injuries and nearly died. He lay in a coma for a month. Friends and family visited — played rock music and chatted — and finally, Richard awoke.

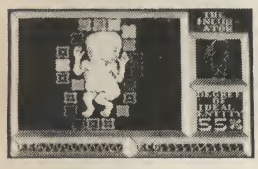
"It wasn't like in the films," said his father. "It was a gradual business; the flicker of an eyelid, the twitch of a finger. Then someone had the bright idea of giving him a pencil. Stiffly, painfully, he scrawled 'R.I.C.H. . . .' and we knew he was going to get better." And when it came to recovery; "he couldn't have been in a better place at a better time." Richard began playing games in February, and is already almost fully recovered — six months early.

So much for the bozos who keep telling us they're harmful.



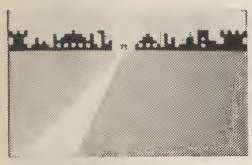
AUTOMATA U.K.

The Piman's Software House



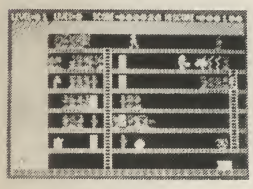
DEUS EX MACHINA

DEUS EX MACHINA 48K Spec. Kempston Joystick & ZX Interface 2 compatible. The unique new era of entertainment, starring Ian Dury, Jon Pertwee, Frankie Howerd and you, in an animated televised fantasy, synchronised to an incredible stereo soundtrack. There is nothing like it in this world.



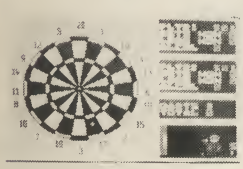
PIMANIA

PIMANIA 48K Spec. The Cult Adventure that's for real! Could you be the lucky winner of 'The Golden Sundial of Pi'? Many have tried and failed. Voted program of 1983 by the Computer Trade Association (Joint winner).



PIROMANIA

PIROMANIA 48K Spec. M/C Arcade Style, Kempston Joystick & ZX Interface 2 compatible. Strike a light! Fire your imagination. That bright spark of a Piman is flaming well out to make the residents of Automata Towers the toast of the town! Can you help Walter Hose dampen the Piman's extinguished career and help the inmates give up smoking?

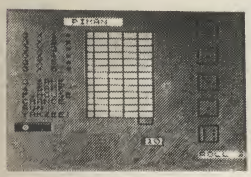


DARTZ

DARTZ 48K Spec. Family fun. This 'arrowing version of your local's favourite game! Includes true life scoring with 'The more you play the more you drink, the worse your game becomes' rule!

PI-EYED

PI-EYED 48K Spec. M/C Arcade Style. Kempston Joystick compatible. The Piman's hit the bottle! Can you help him negotiate the traffic and drink the town dry?



YAKZEE

YAKZEE 48K Spec. and Dragon. Family fun. An oriental game of luck and skill for 1 to 4 players, playing between 1 to 4 rounds. Each tape comes with both the Dragon and the 48K Spectrum versions along with a simple to follow guide on how to play YAKZEE.

NEW WHEELS JOHN? 48K Spec. Family fun. Would you buy a used motor from this man? Dare you clock an old banger? Have you ever wondered what it's like to run your own second-hand car lot? Wheel leave the rust to you!

CRUSOE 48K Spec. M/C Graphic & Text Adventure. Shipwrecked and stranded, on ye remote island, with nothing save a bottle of Granny's patent elixyr, an empty stomach, ye shorts that he stands up in . . and thou. Ye adventure is only just beginning. Can you help him escape ye island's perils?

CRUSOE

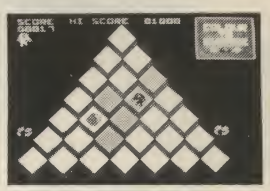
PI-IN'ERE 48K Spec. M/C Arcade Style. Kempston Joystck & ZX Interface 2 compatible. 61 screens of action as Burt searches for the elusive bug inside a computer, while keeping out of the reaches of the minor menaces. The program includes Hi-Score, Save and Load facility as well as Replay from last position feature.

PI-IN'ERE

OLYMPIMANIA 48K Spec. M/C Arcade Style. Currah Micro Speech & Kempston Joystick compatible. For all those who just can't get enough of the Olympics, the Piman stages his own just for you! Yes he's going for gold in the craziest events you've ever seen! Can you set new world records in the Speepichase, Alpi Ski-ing, Pitathlon, Pi-Jump, or even the Butterpi? The Piland International Anthem on the flip side.

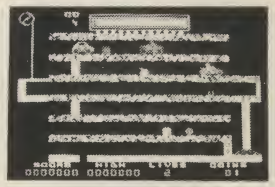
OLYMPIMANIA

PI-BALLED 48K Spec. M/C Arcade Style. Currah Microspeech & Kempston Joystick compatible. Bouncy, bouncy, this fast action game will let you have a ball! Starring The Balls Brothers, Sid the Snake, Jas'n'Col, and your friend and ours The Piman.



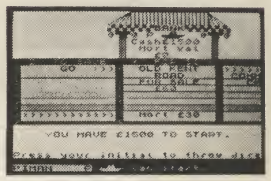
PI-BALLED

MORRIS MEETS THE BIKERS
16/48K Spec. M/C Arcade Style. Kempston Joystick compatible. Morris finds himself abandoned in a multi-storey car park. Help him gather the 10 coins per screen to pay his way out, while avoiding the kamikaze bikers.



MORRIS/BIKERS

GO TO JAIL 48K Spec.
Family fun. A computer property trading game for up to 5 players. Your computer not only acts as a banker, but can also take on the roll of a ruthless player, buying, selling and trading its own property.



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How we rate them–

KKK	= Magnifico!
KK	= Good-o
K	= So-So
None	= No-No

Reviewers–

Steve Keaton
Richard Burton
Trevor Spall
Kim Aldis
Tony Tyler
Nicky Xikluna
John Conquest
Dave Rimmer

THE INFERNO
Spectrum 48K — KK

What *The Hobbit* is to Tolkein's novel, *The Inferno* is, I suppose, to Dante's epic of the same name. Not that I've actually read the thing, you understand. And comprising as it does three volumes of rather murky medieval Italian verse, only a nutter would start looking in it for help with an adventure like this.

Anyway, that traditional guide to the Underworld, Virgil, acts as a sort of Thorin except that he does actually lead the way sometimes and mercifully never once sits down and starts singing about gold. Meanwhile, you descend into the several circles of Hell, beat off harpies, lob bricks at Cerberus the three-headed dog, wade through foetid swamps and crawl across windswept plains. All very gloomy but, as far as it goes, pretty entertaining.

The trouble is, as with a lot of adventures these days, the problems you're presented with seem to be either pathetically simple or so subtle you don't even guess there's something there to be solved. Whatever, despite having descended to the fifth circle a few times, I still can't work out how I've got past Minos in the Hall of Judgement (an early obstacle) each time. Seems if you just hang around long enough he lets you through.

Otherwise, a graphic adventure with a smallish vocabulary that's neither duff nor particularly revolutionary. And if I can't work out how to get into the devilish Castle Of Dis . . . — **D.R.**

From: RICHARD SHEPHERD SOFTWARE
Format: cassette
Price: £6.50
Graphics: KK
Playability: K½
Addictiveness: KK

CHICKEN RUN
Dragon 32 — K

With a single joystick and without a safety net I shall now be a hen, lay eggs, avoid a fox, eat food and open two sets of trapdoors so that eggs are collected and food replenished. 'Huh, child's play!', I hear you mutter and you're probably right 'cos I couldn't do it. But then I'm chicken.

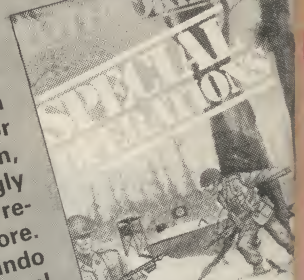
The hen runs around five levels, each with a fox-hole, a shelf for egg-laying and a food tray. An energy scale shows the hen's physical state. If it reaches zero then a life is lost. Being caught by the fox is similarly fatal. Laying eggs is the name of the game. The farmer collects an egg, as long as the trapdoor, which you control, is put in the right place. He then delivers it to the other side of the screen . . . slowly. The farmer also replenishes food trays by collecting corn from the lowest level via the trapdoor and depositing it via another trapdoor, again done at breakneck crawl.

Nine levels of play move everything at various speeds but it's all relative. The farmer can only do one thing at a time while you cluck about watching your energy diminish. Lay an egg too soon and it hatches into a chick (spelt 'chic' throughout the instructions — and it's not!) which then pinches some food. So tedious. Plenty to watch but you can't get on with the game.

The graphics are representative and the animation more of a brave attempt than an achievement. This program has colour, movement and music but lacks thrills, spills and tension. It just gave me the bird and that's no yolk. — **T.S.**

From: IMP-SOFT
Format: cassette
Price: £7.95
Graphics: K
Playability: K
Addictiveness: None

SPECIAL OPERATIONS
Spectrum 48



Another of those Lothlorien strategy things where poor graphics (matchstick men, wobbly bullets, squiggly forests etc) and sluggish responses make play a bore. You handpick a commando team according to individual skills and then set about one of seven increasingly difficult objectives — from locating the enemy compound, through getting stuff out of it, to destroying it altogether.

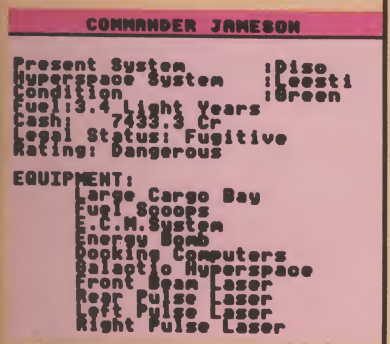
Play takes place on two screens: one a map of the area, the other for individual locations and combat. Apart from moving, you have only about a dozen options. Frankly, since I discovered *Lords Of Midnight*, strategy games like this just seem pathetic. But then I never liked them much anyway. — **D.R.**

From: LOTHLORIEN
Format: cassette
Price: £5.95
Graphics: nowt
Playability: K
Addictiveness: nowt

YOU BET YOUR ASTEROIDS

And lose, most probably, but boy! is it ever engrossing. Acornsoft's Elite has everything, swears a goggle-eyed KIM ALDIS.

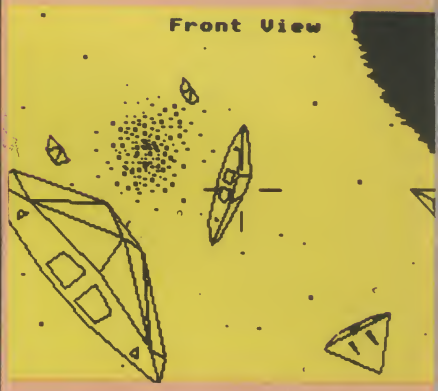
WHEN *Aviator* burst forth from the darkest depths of Acornsoft a few months ago it shed a radiant glow on a somewhat uninteresting software market and created a stunned aura of admiration of the kind you see around a man who kicks bulls around the area that makes a bull a bull. So when I burst into the Big K offices the other day screaming 'IT'S BETTER, IT'S BETTER' I thought it might provoke some kind of reaction. It did. 'Don't be stupid', someone muttered and a large box of last month's issues hit me squarely between the eyes. This was not the kind of reception I expected so I grabbed a nearby head firmly by the ears, dragged it over to the nearest BBC and loaded the game. As I started showing him how to play, the glazed, overworked look gradually faded from his eyes turning to that of the hardened games freak who knows paradise when he sees it. He gave a hoarse scream, forced me out of the seat and took the controls. By this time a few of the others had started to show interest and were drifting slowly in our direction. Before long a full scale fight had developed for a crack at this most wondrous of beasts. It looked as though that was the last I was going to see of *Elite* for some time.



And it really is that good. Vast and highly complicated, it's a sort of space arcade/action/adventure/strategy game where you roam the galaxies earning a dangerous living trading between the planets, avoiding pirates and hostile aliens and behaving yourself — or not — when the local law come sniffing at your tail.

As the game, or should I say epic, begins you find yourself safely docked in an orbiting docking station above the planet Disco. Inspecting your ship you find it to be a Cobra Mk III trading/combat craft, equipped with a front-firing pulse laser and a twenty-tonne cargo hold. You check the market prices and decide to fill your hold with low priced food. There's no way of knowing for sure but there's a pretty good chance of selling it for a profit on Leesti. With a quick glance to make sure everything is OK you launch the Cobra and set hyperdrive co-ordinates for Leesti, a small, light industrial settlement a few light years away. Within minutes the hyperdrive cuts in and before long your viewscreens show Leesti not far away. You open up to full power, life is hard enough scratching a living on the spaceways without losing half your cargo to pirates, and the planet looms closer. Just as you're approaching the safety of local space a blip appears on the long range scanner, followed by another, then another until there are five. They close in fast and suddenly all hell breaks loose. You swerve to meet them, firing rapidly and manage to pick one off. Another soon goes down to a homing missile but the rest are too much. Your only chance is to run for it. You swing round to face Leesti and after what seems like hours of endless dodging and weaving, your control panel indicates that you are within the defensive screen of Leesti's space station. Your energy banks may be heavily drained but at least you've made it and maybe your cargo will fetch enough for that beam laser you've always been promising yourself. If that last episode was anything to go by you were going to need it.

So goes a typical session at the controls of *Elite*. The action scenes take place in real time — very real — line graphics, similar to those which made *Aviator* so popular, and believe me it's hectic. Pirates are only one of many hazards facing you in this universe. If you think you can make a fast buck by running contraband, slaves or narcotics, then watch out for the local law. They take none too kindly to lippy traders trying to make fools of them and they show it. Once they're on your tail you'll never shut them off. On top of this there are the Thargoids, virtually indestructible, invariably nasty.



It really is unlikely that you've ever seen a game of this kind of scope, probably as close to a genuine simulation as there is ever likely to be. A few days ago if anyone had asked me if anything like this was possible he probably would have received a sharp clout to the base of the neck for asking inane questions, but now? Who knows, anything is possible. Whatever happens, this is a classic — in the genuine sense where classic means Forever.

Reviewer Impressed By Unexpected Humility of Software Genius

A FEW phone calls put Big K in touch with David Baden, co-author of Elite. *David and his partner, Ian Bell, had spent the past year coding before the epic was ready and were now sitting back, basking in the warm glow of praise being showered on the game.*

David Baden, it turns out, is a social sciences student and Ian Bell studies maths, so Elite *was written largely in spare time. 'It's just a hobby really', we were told. Some hobby. And what made him write it? 'It started off as a combat game'.*

Neither of them have got any further than a 'competent' status, which still leaves 'dangerous' and 'deadly' to go before they reach 'Elite', the ultimate accolade. If the creators can only get that far what chance do us ordinary mortals stand? 'There's a rumour floating around that someone's reached 'deadly' but I'm not sure who'.

Baden was very careful to point out that Elite *has nothing to do with* Aviator, *in spite of the obvious visual similarities — which is understandable considering the amount of work they've put into it. Let's hope the keep it up.*

BIG K

CARPET CAPERS
Spectrum 48K

K K 1/2

Take a collection of clearly quite deranged carpet layers leaving multi-coloured trails behind them, add a selection of objects to be picked up as you move from room to room and the overall effect of *Carpet Capers* is a bit like *Painter* meets *Jet Set Willy*.

Sounds good? It is — eventually.

Initially, though, it's just bloody irritating. The carpet layer figures are horrible, flickering stick men, which take a bit of getting used to. And then there's your apprentice, who buzzes around you like a blue-arsed fly, nabbing objects that you're after and often making it impossible to tell exactly where you are. Result: until you get the hang of it, utter confusion.

Once you get going, however, it's completely absorbing. I looked at my watch after a couple of games and was astonished to find that I'd been at it for an hour and a half. The trick is to get the objects you need to keep you going, get a key to let you into the next room, nobble as many other carpetfitters as possible and lay a quota of carpet without blocking yourself in a corner. All in all, over nine screens just enough tricks to get the old adrenal gland buzzing nicely.

It makes really nifty patterns, too. — **D.R.**

From: TERMINAL SOFTWARE
Format: cassette
Price: £5.95
Graphics: KK
Playability: KK
Addictiveness: KKK

BEAM RIDER
Dragon 32

K

Let's see . . . I'm the beamer (looks like a yellow splodge to me) and those closely packed little blue boxes are blocks of nuclear waste. 'Clear as many boards as possible by running over blocks with your beamer before being hit three times.'

Okay.

Using the joystick you move the beamer/yellow splodge horizontally or vertically as required obliterating the nearest block, whether it be adjacent or across a gap. Therefore, you flit madly around the screen while red bugs amble about trying to block your path, with fatal consequences.

A circle with a mind of its own bounces sedately around the screen rebounding from blue blocks which temporarily change colour. By crossing these the beamer becomes immune to bugs for a while. Colliding with the circle or bugs results in a pretty routine whereby the beamer fragments, the bits cascading to the bottom of the screen. It's almost a pleasure to get zonked, surely a weakness in any game.

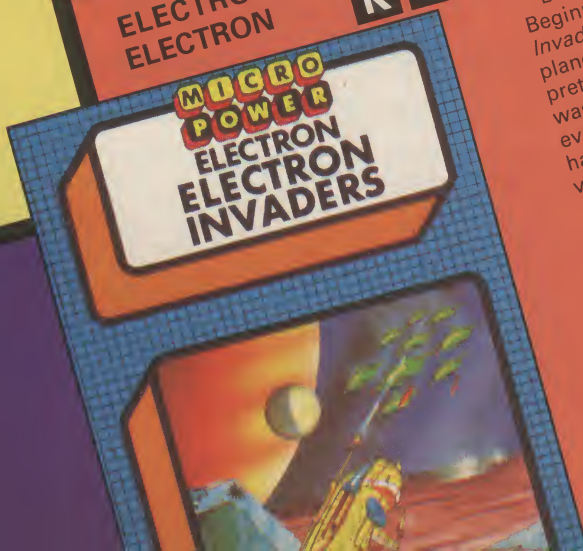
Having developed a strategy for guaranteed success (yet another!) joystick control (why not a keyboard option?) is not precise enough to respond to your every whim. Thus, all your plans go up the spout when you obliterate a block you wanted to save. Although not mentioned you can press BREAK to abandon the current game in disgust.

There are several patterns of boards to clear as o progresses but someh the whole concept is u spiring. — **T.S.**

From: D & D SOFTWAR
Format: cassette
Price: £8.00
Graphics: K
Playability: KK
Addictiveness: K

ELECTRON INVADERS
ELECTRON

K K



New owners begin here. Old-timers pass on, there's plenty more for you in these pages. Listen carefully. In the Beginning there was *Space Invaders*. It spread across the planet and was found to be pretty hot stuff. Yea verily, it was written that, henceforth, every new computer would have its own version of this venerable collection of bytes. Thus we come to *Electron Invaders*. All I can say is thank heavens this was done by Micro Power. The sheer professionalism of this Beeb-orientated company has been commented on before. The high quality presentation of all its games can make even an 'ancient' offering like this look good on the screen. Electron owners can feel fortunate that they've got a first class Invaders clone here.

All the familiar elements are faithfully reproduced; phalanx upon phalanx of aliens, the mothership, sliding laser base, etc. Interesting touches include larger bunkers and bombs which explode in mid-air spraying shrapnel everywhere.

Sound, graphics and colour are excellent. Simple left, right and fire controls make the action fast. Options include 1 or 2 players and sound on or off.

A recommended intro to the world of serious alien bashing for all Electron owners with that special merciless streak — **D.R.**

Maker: MICRO POWER
Machine: ELECTRON
Format: cassette
Price: £7.95
Graphics: KK
Playability: KK
Addictiveness: KK
Overall: KK

GRABBER
Dragon 32

K

A review for people who don't like reviews: Don't buy this. For those who desire details, read on.

Grabber is a poor relation of the Pac-family. A novel idea presents you with a split-screen featuring two mazes ('maze' is a generous term for these ultra-simple layouts). There are four treasures and two 'power-pills' in each maze and also four centre boxes, one for each treasure. Using the grabber you move around a maze and, collecting them one by one, return each treasure to an empty box.

Monsters materialise in any box and chase you, also taking any treasures from the boxes if possible. If you are caught you lose a life, get a 'power-pill' and you kill the monsters. Alternatively, pressing the fire button transfers you to the other maze to follow the same process. You can switch mazes when you like to avoid trouble although the monsters in both mazes continue doing your efforts whether you are there or not. Successfully placing all eight treasures in the boxes moves you to a different pair of mazes.

Good idea isn't it? Unfortunately, the documentation is inaccurate, the graphics pathetic, the joystick response suspect and the music awful. Ho hum! —**T.S.**

From: TOM MIX SOFTWARE
Format: cassette
Price: £8.00
Graphics: It has
Playability: K
Addictiveness: Zzzz!

BUZZARD BAIT
Dragon 32

K K

Dangle a dongle and thwart a thief! This program, packaged in an awful outside box, comes complete with a little black wotsit which must be plugged into a joystick port before the cassette will load. Tapes won't load without a dongle and there's only one dongle per purchase. 'Nuff said.

Buzzard Bait is a Dragon version of the arcade game, *Joust*. Mounted on your trusty joystick-controlled ostrich, lance at the ready and four lives at your disposal, you fly forth to do battle with thine foe.

The fire button controls flight while 'gravity' hinders it. Clouds provide strategic rest points and obstacles to movement and a built-in rebound effect can have you bouncing around all over the screen if you're not careful . . . even if you are careful actually. The opposition consists of several foes whose numbers increase as you progress. They are despatched by colliding with them, ensuring that you are at the greater altitude. Otherwise you are dismounted and your reincarnation appears on a cloud (not a harp in sight). Dismount an opponent and an egg bounces away, only to hatch into a further foe if you don't 'collect' it first. Take too long to clear a 'wave' and a pterodactyl appears to attack you with vicious and fatal swoops. Difficulty increases automatically by the clouds and land disintegrating and the appearance of a monstrous hand to pluck you from the skies should you fly too near.

This game shows what the Dragon can do. It leaves most other software in the shade. Control response is excellent while the graphics, animation and sound make for an exciting and fun game. The two-player simultaneous play option is a rare treat but the price is a bitter pill. —**T.S.**

From: TOM MIX SOFTWARE
Format: cassette
Price: £9.95
Graphics: KK
Playability: KKK
Addictiveness: KKK

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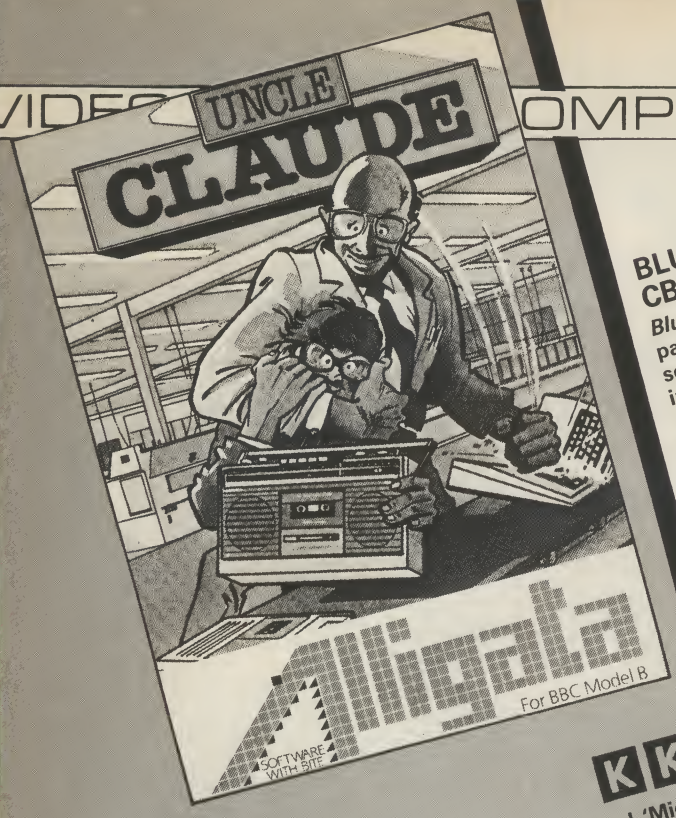


UNCLE CLAUDE
BBC — **KK**

Ignore the cover . . . this is quite a good game. You control 'Micro Micky' who is on the run from "Uncle Claude" (who looks remarkably like Sir Claude, that well known used car salesman). This enigmatic figure fires Spectrums at the hapless Mick, who can retaliate only by shunting strange blocks that litter the screen into him.

A conveyor sits at the bottom of the screen, moving from right to left. You must shunt down all the blocks down to the conveyor belt, where they disappear off-screen. Once all the blocks are gone, a key appears. Roll over the key to hit the next level.

Weird custard pie bonuses appear, BBC's cruise downward at intervals and other obstacles appear at later levels, including a mobile barrier between you and the conveyor belt. It's refreshing to see that the characters change at each level, instead of the same old symbol every time.

While lacking the length and depth of something like *Jet Set Willy*, everything is certainly better animated and a lot more fun. Neat. — A.G.

From: ALLIGATA
Format: cassette
Price: £7.95
Graphics: KK
Playability: KKK
Addictiveness: KK

BLUE THUNDER/
CBM 64 — **K**

Blue Thunder was the name of a particularly trashy American series starring a powerful and indestructible helicopter. *Blue Thunder* is also now the name of a game for the '64 starring a helicopter. Here any resemblance ceases.

The cover shows what looks like a still from a multi-megabuck sci-fi film: the reality of the game is very different. The helicopter is a single colour, single sprite blob crowned with what look vaguely like rotors.

The object of the game is to avoid or destroy the enemy defences to get to the nuclear reactor, which looks suspiciously like an over-sized brick barbecue. Fly over the hill next to it to get to a small landing pad to pick up the prisoners from a little hut and return to base, preferably in one piece.

Fuel is limited, and so is the game: the panel (one 6-year-old, one 84-year-old, two dogs and a hamster) gave mixed reactions to this, but all were bored after 15 minutes of gameplay. — D.R.

From: RICHARD WILCOX SOFTWARE
Format: cassette
Price: £6.95
Graphics: KK
Playability: KK
Addictiveness: K

PERSEUS & ANDROMEDA/
Atari (16K) — **K**

Leaving aside graphics, there are two basic kinds of adventure games. Either you, the player, are the principal ("You are in a narrow passage with exits to north and south. What next?") or the computer is ("I am in a narrow etc"). *Perseus & Andromeda* belongs to the second group, sometimes known as 'puppet' games as you control rather than role-play the hero. Personally I can't be doing with them. With this one, so far from generating my normal two o'clock in the morning obsessiveness (I'm going to crack this if it kills me), I found myself totally uninterested in the problem of how to get beyond the first eight locations.

This is *Mysterious Adventure No. 8*, so presumably this kind of thing appeals to enough people to keep Channel 8 in business, even if it seems pretty old hat to me. To those people I can only say that the original story was a cracker, so the game is probably up to the maker's par. — J.C.

From: CHANNEL 8 SOFTWARE
Format: cassette
Price: £9.95
Graphics: None
Playability: K
Addictiveness: K

HYPERBLAST/
Atari (32K) — **KK**

I dunno, maybe I'm too goal orientated, but taking on wave after wave of 'creatures' (Krunks? Xillicks? Zoomerangs?) seems about as interesting as train spotting. Bang, bang goes your Space Cannon. Ding, ding, ding go the creatures. The cannon, which slides back and forth at ground level, has three missiles, the centre one firing first, followed by the wings. When you hit one of the creatures circling rather aimlessly above you, it drops a flurry of missiles and if you don't get out from under, you lose one of your five lives. Missiles also come your way in a rather off-hand fashion anyway. Rather usefully (for reviewers at least) there's a demo mode, so you can watch the whole thing cycle through its paces.

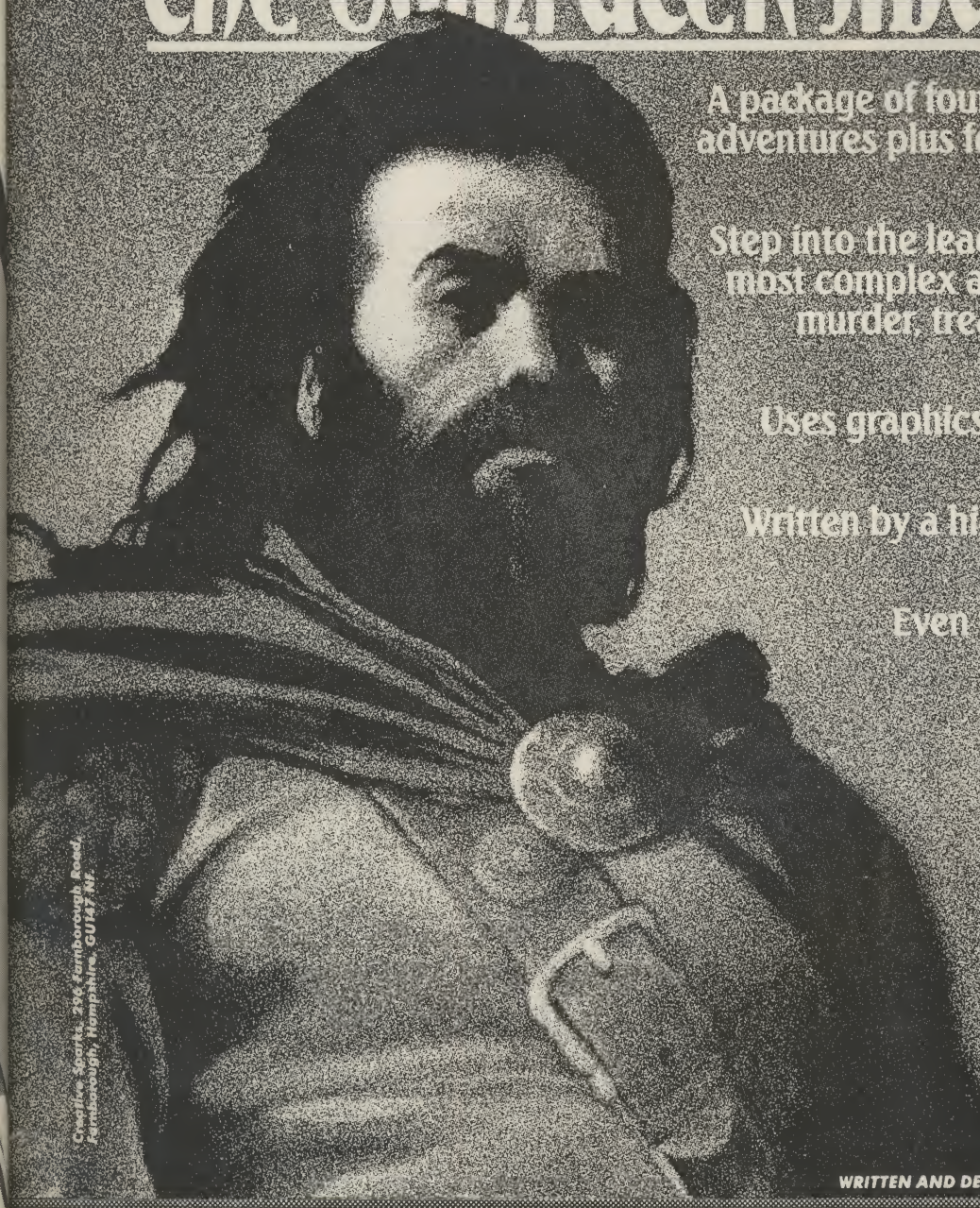
I discovered one sneaky technique, opening up just as the creatures boiled out of thin air, which often produced a gratifying, if occasionally lethal, rain of debris, thinning the swine out straight away. Big mistake is to get caught in a corner.

Standard arcade shoot-em-up stuff but well translated with goodish graphics and sound effects. Worth a look if you're into *Defender* and the like. — J.C.

From: ENGLISH SOFTWARE
Format: cassette/disc
Price: £9.95
Graphics: KK
Playability: KK
Addictiveness: Pass

MACBETH

THE COMPUCER ADVENCURE



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MUGSY
Spectrum 48K

Despite having been foisted upon us by a mob of spat-spittin' Rent-a-Cagneys, Melbourne House's controversial gangster fest has lain largely untouched by the dodgy denizens of the BIG K office. Not surprising perhaps when you consider the astonishing inanity of this well-cloaked simulation.

As Mugsy, a two-bit hood in an eight-bit world, you must take control of the Chicago rackets. This is achieved largely by squeezing out rival gangs and oiling the paws of the local precinct. As your stash of cash grows your infamy spreads and Big Rocco and the boys move in on your operation, regardless of bribes. If he fails once he'll quickly try again. He's certainly not thin-skinned. It's all exceptionally repetitive.

Only the presentation of *Mugsy* is of note. Cleverly crafted as a video comic it features some extraordinary graphics and a nice line in dialogue, consequently the initial sense of atmosphere is superb. You can almost smell the aroma of mafiosa pasta as you wander along the wharf. Unfortunately prolonged play results in brain seizure. The game fails to live up to its early promise. Perhaps Melbourne House can make amends with a more engrossing sequel? It would be a shame to let such visual flair go to waste. — **S.K.**

From: MELBOURNE HOUSE
Format: cassette
Price: £6.95
Graphics: KKK
Playability: K
Addictiveness: Nope

GO-SPRITE
CBM64

KKK

You can have a lot of fun with something like this trying to find out if you can irretrievably crash it. You can't. Carefully thought out and structured in such a way as to be simple to use, this is a good example of how to write software which a lot of people would do well to bear in mind.

Go-Sprite is a sophisticated sprite editor; a sprite editor is something that edits sprites. Got that? Right. Sprite editors are ten a penny and most don't do a lot but *Go-Sprite* takes you a step further into animation and, more importantly, does it so gently you might not even notice. The program goes to a great deal of trouble to be very user-friendly, making extensive use of icons — a trendy word for pictures.

The first screen is the draw screen where all the creating and editing of sprites are done. This is fairly standard stuff, a large grid of squares to draw your sprite on and a sprite-sized display in the corner plus various symbols for inverting, shrinking and stretching the sprite. The operation is very simple, hit an icon with the cursor and the appropriate function comes into play. I picked up the nearest cursor and hurled it at an icon. Small pieces of screen spread themselves all over the room. No *Coronation Street* tonight.

Luckily I had another screen tucked away somewhere so after making a few spaceships I moved on to the next screen. This is where all the copying and overlaying is done. Sprites can be copied over into each other and you can pile sprites on top of each other using a priority stack to control how they appear on the screen.

When you've finished making sprites you can move across to the animation screen where sprites are dumped onto a film strip together with screen coordinates so they can be animated about the screen.

After all this *Go-Sprite* lets you SAVE all the sprite data and animation coordinates to tape or disc in BASIC data statements and arrays so it's very easy to make good use of the program and, more importantly, it takes a lot of the trouble out of programming in Commodore's hideous BASIC. Very nice. — K.A.

From: MIRRORSOFT
Format: cassette
Price: £9.95
Graphics: KKK
Playability: N/A
Addictiveness: N/A

THE HOUSE OF USHER
CBM64

KK

Here we have one of those super-miniscule, single pixel character beasts. Even with a magnifying glass the size of a dinner plate you need to pop your eyes out of your sockets to see what's going on.

On the other hand there's certainly a lot going on. A total of ten screens to get through, all difficult enough to tie you up like the Gordian knot.

All the pages are of the climb ladders and run along walls variety, the whole lot combining to give just about every variety of walls and ladders game ever conceived. And they're all hard. Very hard. One or two gave the distinct appearance of being totally unsolvable.

After a short walk up the front drive the game starts proper. Climb up a ladder, hop off a platform and you have immediate access to nine doors, each leading to a different room. There's no space here to give a concise rundown on all the rooms but suffice it to say that you have to negotiate holes, beasts, moving platforms and cannon fire. Once all the rooms have been safely negotiated the tenth room becomes available — of which there's about as much chance of mastering as of playing pool on the Moon.

Definitely one for the numero uno gamestar. The kind of guy who does the Hampton Court maze, plays grandmaster chess in his head and tap dances. All at the same time. — **K.A.**

Graphics: K
Playability: KK
Addictiveness: KK

From: ANIROG
Format: cassette
Price: £6.95

MASTER MARINER
Spectrum 48K

KK

In which you captain the good ship 'Titan Trader' and attempt, by buying goods at one port and selling them at another around the coast of Britain, to become a millionaire. As in real life, that's a little difficult. Especially as you've no idea what the selling price is going to be until you've arrived at your destination and clocked the menu and options thereabouts.

Marred by some of the most mind-numbingly sluggish graphic sequences in the history of computer gaming and made damn near impossible in the early stages by a series of random and improbable disasters that hit you every single time you set sail (pirates, sea mists, customs officials who always know when you've got arms or bullion on board), it's actually pretty entertaining in the buy/sell stages. 'Coals To Newcastle' would have been a much better title. — **D.R.**

From: ATLANTIS
Format: cassette
Price: £1.99
Graphics: so-slow
Playability: KKK
Addictiveness: KK

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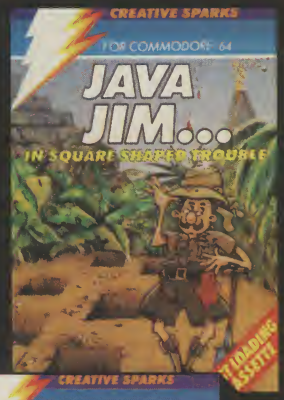

COUNTDOWN TO MELTDOWN

An amazing graphic action adventure game which puts you in charge of a team of androids trying to reach the core of a nuclear reactor before it explodes.
This game has over 2000 rooms to be negotiated and every single one of them is in 3D!!
Probably the most exciting game yet developed for the C-64.
Fast loading cassette.

BIRD MOTHER

This is a delightfully original game which uses nature as the setting for a highly compelling and challenging game. Guide the Bird Mother as she builds her nest and raises her young, finally protecting them from a predator hawk.
Fast loading cassette.
The stunning graphics and music in Bird Mother are not to be missed.

WING COMMANDER

This is a highly sophisticated flight combat simulator which puts you in the pilots seat. Highly advanced machine code programming has ensured you feel every stomach lurching dive and roll.
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Fast loading cassette.

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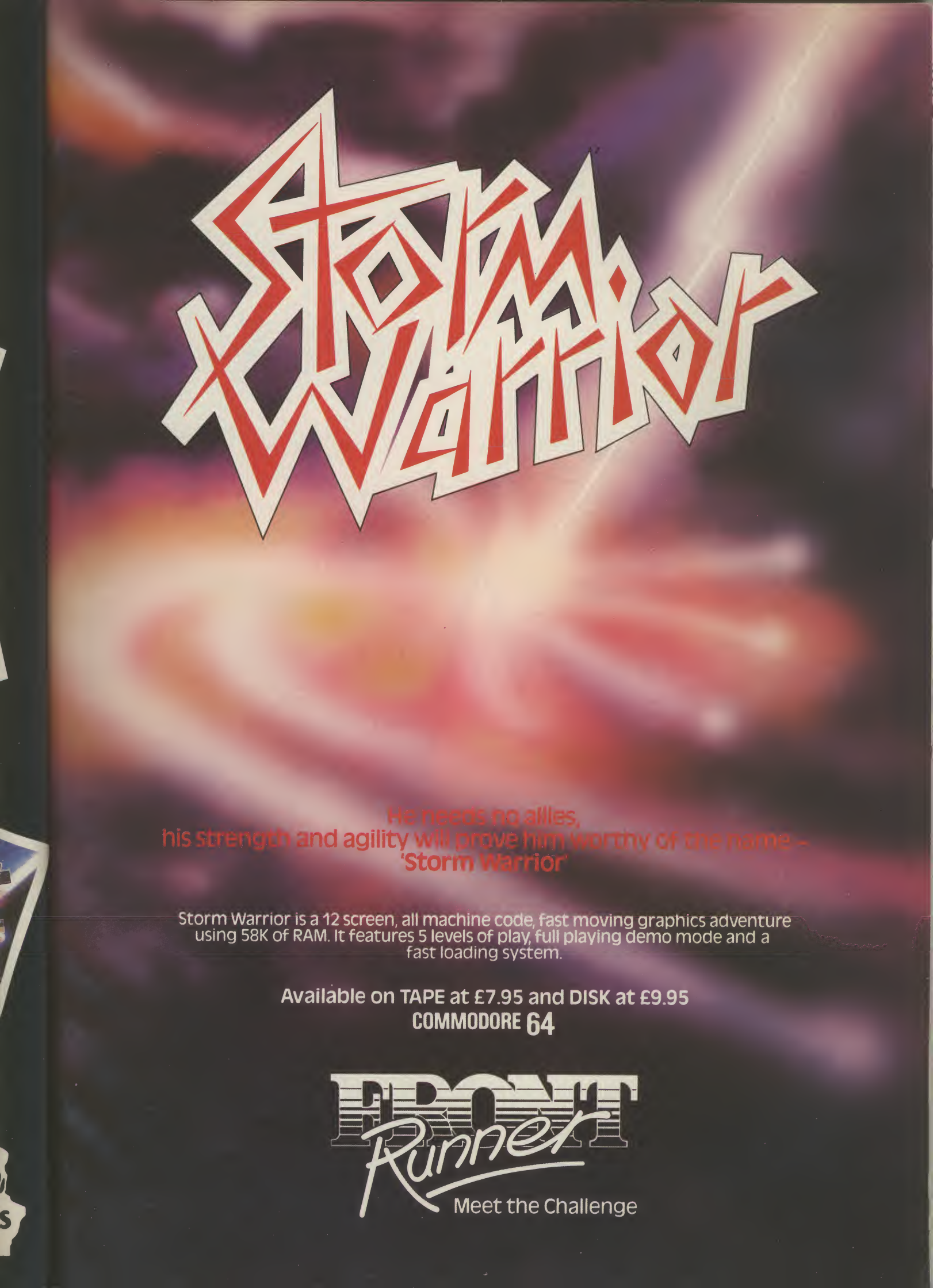
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COMMODORE 64
FRONT Runner
Meet the Challenge

TROLLIE WALLIE/ CBM64

KKK

The heroic saga of Wallie continues. In this third game featuring the small unlovable blob, Wallie must set round a supermarket picking up the shopping that he has been sent for. The supermarket in this game does not have the usual shelves of dogfood and Domestos: disappearing floors, slides and moving beams are all present to trap unwary Wallies. The other shoppers are as weird a bunch as in any Tesco's on a Saturday morning. Anyone who has played *Son of Blagger* by Alligata, will find the scenario familiar. For those at this point saying 'Son of Who?', the object is to make your way around the screen, which scrolls very smoothly in all directions, getting across the disappearing floors without falling through, avoiding the nasties and not setting squashed, spiked or otherwise mutilated. Despite its somewhat derivative nature *Trollie Wallie* is an enjoyable and addictive game with graphics of the standard we have come to expect from Interceptor.

The background tunes are mostly by Jean Michel Jarre, the person given credit on the cover for the music has merely rearranged them for the '64. There is the usual Interceptor humour in the game; on parts of walls scroll messages containing snippets of totally meaningless disinformation about the authors. The game requires a joystick, but then what self-respecting '64 gamer hasn't got one? — **D.G.**

From: INTERCEPTOR SOFTWARE
Format: cassette/disc
Price: £7.00 cassette/£9.00 disc
Graphics: KKK
Playability: KKK
Addictiveness: KKK

LES FLICS Spectrum 48K

Dressed up as an "arcade adventure" in the style of the Pink Panther ("'Allo, ahm Unspecteur Cleuseau") films, but actually just living proof that a whole can be less than the sum of its parts.

With joystick or cursor keys, you buzz a car a round a maze and enter different buildings. Within each, you avoid *les vieux bill* and ascend a structure while collecting various *objets*. Thus it is to varying degrees derivative of *Manic Miner*, *Donkey Kong*, *Atic Atac* and one of those ancient arcade car-in-a-maze things, without coming within a mile of any of them.

Tres ennuyant, mes enfants.

— **D.R.**

From: PSS
Format: cassette
Price: £6.95
Graphics: Primitif
Playability: gauche
Addictiveness: rien

GRAB-IT CBM64

KK

Grab-It ... Ouch! Someone around here took that literally. Someone around here is going to have their teeth extracted with a pickaxe.

What we have is a nice little game based around a nice simple idea. At the top of the screen is a small spaceship from which comes a grabber — geddit — controlled by a sharp-witted and highly skilled person who places himself at the keyboard. At the bottom are a selection of objects that have to be transferred to the spaceship by means of the grabber. In the meantime various flying objects bounce around the screen which cause the grabber to disappear in a puff of smoke should the sharp-witted and highly alert person at the keyboard fail to avoid them.

On the first screen you only have to avoid a solitary balloon but as you move up through the screen this is joined by kites and seagulls until no less than six of the beasts are bouncing around the screen like hyperactive tennis balls.

It's like a sort of reverse tennis where you have to avoid the bouncing bits instead of hitting them. Quite simple but fun nonetheless. — **K.A.**

From: VOYAGER
Format: cassette
Price: £
Graphics: KK
Playability: KK
Addictiveness: KK

ZAXXON/Atari (16/32K)

KK

Though the box art is extremely misleading — it doesn't look anything like that good! — this is nonetheless a very adequate implementation of the classic arcade game. You get the first space fortress, outer space, the second fortress and the Zaxxon Robot encounter, seen from the usual 45° angle. Get through and you go back for another, harder pass.

The differences between the 16K and 32K versions are that the former has no pause facility, doesn't have base missiles in the first fortress or altitude control in outer space, and you have to destroy the Zaxxon Robot itself, rather than its missile. Not a whole lot else to say, really. I mean you must know more or less what to expect from Zaxxon by now, surely? — **J.C.**

From: SEGA (US GOLD)
Format: cassette/disc
Price: 14.95
Graphics: KK
Playability: KK
Addictiveness: KK

SOLO FLIGHT
CBM64

KKK

U.S. Gold software has flooded on to software retailers' shelves in an attempt to bring 'the best of U.S. games' to a wider market in this country.

Much of it would be more realistically described as 'U.S. Old'. *Solo Flight* is an exception. This is a realistic flight simulator in which you deliver the U.S. Mail.

The graphics are good, but not as good as the screen shot on the back cover which looks to be from the Atari version! Sound, however, is rather feeble, the engine chugs happily as you rev it up but other noises are noticeably absent.

You control a light aircraft which is shown on the screen, complete with shadow at low altitudes. The airports are shown as outline shapes only but the perspective shift as you approach or take off is quite convincing. The awesome looking mountains on the front cover are very disappointing, being represented as blob-and-line drawings on the screen. When you crash or complete a mail run your progress is shown as a line plotted on a map of the territory you cover.

An instrument panel features altimeter and engine speed dials and various fuel, heading, pitch and climb rate indicators.

After about two hours' play it was possible to take off and land every time on the easier levels, more fun was then derived from taking the plane to its ceiling, increasing air speed to maximum and diving at full power to a satisfyingly fatal crash. — **D.R.**

Maker: MICROPROSE (U.S. GOLD)
Other versions: Atari
Format: cassette/disc
Price: £9.95 (cassette)/ £12.95 (disc)
Graphics: KKK
Playability: KKK
Addictiveness: KK

THE HOUSE
Spectrum 48K

A text-only adventure composed with the Quill system and, apart from the odd diversion crafted by chums for private amusement, the first such I've played. And what a disappointment. A few issues back after developing a nodding acquaintance with The Quill I expressed the heartfelt wish that, with the mechanics made simple, maybe more *imaginative* effort could go into adventure writing. Yet here we have a string of utterly boring cliches: a haunted house, coffins, crucifixes, treasure hidden somewhere, blah, blah, blah. I positively screamed with boredom on discovering that the first major problem was finding the key to fit the front door.

Add this to an inexcusable (with The Quill) lack of synonyms in the vocabulary and a host of stupid red herrings and the result is quite simply infuriating. It remains only to note that whosoever first conquers this thing stands to win some kind of cash prize. If they can get through it without falling asleep in the first five minutes, they'll have deserved it. — **D.R.**

From: CELYN JONES SOFTWARE
Format: cassette
Price: £5.50
Graphics: K
Playability: None
Addictiveness: None

DAN STRIKES BACK
Atari (16K)

KK

The story in Simon Hunt's one player, joystick operated sequel to *Diamonds* is that Brian the Blob has stolen the Great Diamond and stashed it in "the deepest vault". In other words, your little person has to penetrate six maze levels and then get out again. Brian chases you relentlessly while various hieroglyphic nasties pass up or down on seemingly random courses. To get from one level to another you have to clear each level of mushrooms or small diamonds and it gets harder (what else?) as you go down.

Not exactly mould breaking or earth shattering but good fun, with some nice touches. The Level 3 spider's webs are very well done, as is Dan's little ghost when he gets killed. There are times, particularly round the randomly opening and closing doors on two of the levels and places where you can't go up, when you get killed more by bad luck than bad judgement. I think three lives, with no bonuses, is a bit mean, and certainly makes it hard to get into the game. — **J.C.**

From: ENGLISH SOFTWARE
Format: cassette/disc
Price: £9.95
Graphics: KK
Playability: KK
Addictiveness: KK

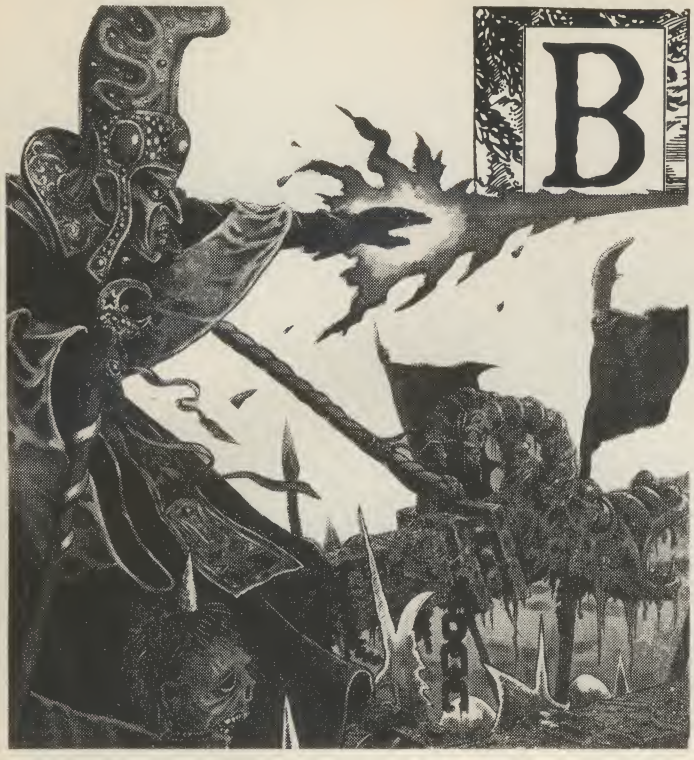
VAGAN ATTACK
Spectrum 48K

K

Calling Earth . . . come in Starfleet Command. We are hopelessly lost somewhere off the right of the screen. All systems are so badly chewed up that even the Damage Report mechanism just spurts out gibberish. Our engines won't move us. We are floating helplessly in the inky darkness beyond the Galactic Rim. Even, God help us, a suicide attempt with an anti-matter bomb failed to end it all. Will someone, somewhere *please* tell us how to QUIT?

Answer: you can't. Apart from that rather obvious fault (I got lost first move) this is a reasonably sprightly split-screen space strategy game in which we, with two kinds of drive, three kinds of weapon and several varieties of scanner, buzz about the galaxy putting the Vagans in their place. Not bad but nothing special. — **D.R.**

From: ATLANTIS
Format: cassette
Price: £1.99
Graphics: K
Playability: K
Addictiveness: K



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You swear

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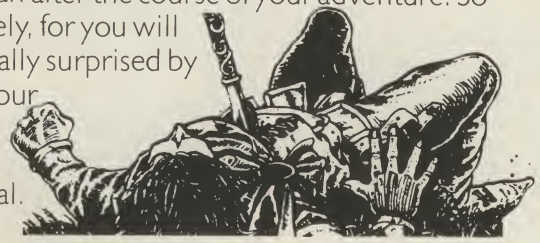
When you were training with the Kai Lords, you acquired many secret skills and disciplines. Now, you may need to use them. You may need to improve some, and disregard others.

"Combat Skills" may be needed to defeat the enemies you encounter on your way to reaching the beleaguered King, and whilst saving your country. You will need "Endurance" to survive. Each decision you make can alter the course of your adventure. So choose wisely, for you will often be totally surprised by the effect your choice may have on your survival.



THE SURVIVAL DISCIPLINES

Over the centuries, the Kai Lords had mastered the skills of the warrior. As you proceed through your adventure you may find that you are becoming more and more proficient. If you, too, have mastered these skills they may save your life!

You can learn how to hide undetected amongst rocks and trees of the countryside. In a city, you can look and sound like a native which may help you to find shelter.

Learn how to communicate with animals and move objects by sheer concentration alone.

You can develop a "Sixth Sense" that warns you of imminent danger. It may also reveal the true nature of a stranger.

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The discipline of "Healing" can restore your "Endurance" after being wounded in combat.

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When you entered the Kai monastery you were taught to fight with daggers, spears, warhammers, axes and swords.

The evil Darklords, though, have the ability to attack using "Mindforce". Lone Wolf can learn the discipline of "Mindshield" and also "Mindblast", the old Kai Lord's ability to fight using the forces of the mind alone. You, Lone Wolf, control the combat, you decide whether to fight or not, and you alone can manipulate the moves.

THE EQUIPMENT TO SURVIVE

You set out with just an axe, a leather pouch of gold crowns and a map of Sommerlund which you have discovered amongst the smoking ruins of the monastery.

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revenge

ZIP CODE

KEEPING IT IN THE ATARI FAMILY

MIKE GOLD probes the new regime at Atari.

YOU KNOW, if Atari ever goes out of business, we micro-watchers won't have much to talk about.

The 7800 video game unit promoted more yawns than sales, Lucasfilms' transition from The Force to The Chip proved to be in vain, and Warner Communications got sick of running a half-billion dollar loss. They sold the home division — everything but the arcade games and the mystical (and thus far mythical) AtariTel units — to Jack Tramiel.

TRAMIEL-STYLE

The deal is surprisingly simple: Warners virtually gave Tramiel Atari for a fistful of I.O.U.s and stock options. If Atari turns the corner — and it's one hell of a corner — Warners will make some real money. If not, well, it was dying anyway.

Tramiel was the founder of and the power behind Commodore. He's still the founder, but earlier this year he was unceremoniously dumped amid a slew of rumours. Commodore was — and is — extremely successful; the problems were of a more personal nature. Ostensibly, Tramiel wanted to install his sons in positions of authority at Commodore.

To say Atari's new owner runs a tight ship is to imply there's some sort of chain of command. Atari now is the Tramiel family ship: Jack is the company's chairman, his son Sam is president, his son Leonard runs software development, and his son Gary has the unenviable task of collecting unpaid debts. Family arguments now have a direct bearing on unemployment lines.

If the Tramiel family can save Atari, it is with the same know-how and practices that made Commodore a company to beat. The formula is simple: low overheads, foreign production, low prices. Move everything overseas where labor is cheap and unions don't exist, and then buy the raw materials cheaper than anybody else.

They had to build a new type of revolving door the day Jack Tramiel arrived at Atari. He and his sons came in, and nearly everybody else was fired.

Then they moved fast. Atari clamped a tight lid on information — a stunt that worked well for IBM. They killed or tried to kill as much advertising as they could, including the potentially lucrative television campaign Warners had in place during the summer Olympic games. They weren't entirely successful, but they had already made the decision to continue the popular and successful Alan Alda ads for the 800XL, so this expensive and valuable airtime was put to good use.

Tramiel fired the first two shots in his war against his former company. He immediately killed all Atarisoft games for the Commodore 64, and he hired a bunch of his bright-guys from Commodore. It's clear to see who Tramiel sees as the enemy.

Jack Tramiel has a formidable task: Making room in an already crowded market. It's tough to beat IBM at the high-end, and the middle-ground is owned by Apple. Radio Shack/Tandy has a solid foothold in both fields. Commodore had a lock on the under £500 end of the market, but the CBM64 is seen as ancient and the Plus/4 as something only a bit more interesting than Atari's 7800.

NEW BROOM

The 2600 is a dinosaur staring at oblivion, but nobody's sure when the animal will die out. There are between ten and 15 million 2600s still in people's homes, but exactly how many of them are still being used is unknown. So what did Jack Tramiel buy?

He bought the Atari name — still the most recognised name in the home computer field. He bought a large but dying market for 2600 software, and he bought the mildly successful 800XL. Separately, Tramiel bought a ton of disc drives, which he will use on the 800XL or on some new marvel.

THE CHALLENGE

So what is going to happen? A few highly-educated guesses:

(1) The 5200 is dead. Warners killed the hardware; Tramiel will kill the software.

(2) The 7800 might very well be stillborn. If it ever sees the light of day, it will be dumped in the fashion Warners dumped the Atari 1200 (which never made it to the U.K.).

(3) Atari will continue to sell 800XLs and make Atarisoft and 2600 software, at least for the time being. Tramiel has to keep the Atari name alive.

(4) Stock will be dumped at bargain basement prices in an effort to bring cash into the company. The 2600 unit is expected to sell for around £30 by Christmas.

SUPPOSING. . .

(5) Something new and fantastic will be in the stores shortly after the first of the year. Lots of memory and bells and whistles — something that will leave the Commodore 64 in the dust.

And what is Commodore doing? They just purchased Amiga Corporation, a small outfit that is producing a 32-bit micro described by the *Wall Street Journal* as "Macintosh-like" but for one-third the cost.

Jack Tramiel wanted Amigo.

Atari-watching is more fun than ever.

STATESIDE CHATTER

The Coleco Adam still is hanging in there. During the fall months, Coleco is literally trying to give the machines away. The unit retails for $750 (but is sold for much less), and Coleco now is throwing in $100 worth of free software.

During the fall months, Coleco is offering "certain individuals" what amounts to $500 scholarships. These certain individuals must be under 18 years old, they must buy the Adam this fall, and they can't turn 18 until fall of 1985. That leaves one hell of a lot of people.

If these kids enter college, they will receive a cheque for $125 at the end of each school year they complete, up to a maximum of $500.

There appears no truth to the rumour that, if the free software and free tuition help campaigns fail, Coleco will begin shrink-wrapping $100 notes in each Adam box.

One person alone could go with Pitfall Harry into the Lost Caverns... You!

Running on Commodore 64, Sinclair Spectrum & MSX System at your usual software store.

Oh Harry. This time he's gone too far.

Somewhere, buried deep in the lost caverns of Machu Pichu, Peru, lies the stolen and, of course, priceless Raj Diamond, along with a hoard of missing gold bars.

Harry's little niece Rhonda and Quickclaw, her cowardly cat, are supposed to be with him, but they strayed away and are lost in the bowels of the caves.

A wealthy university has asked him, while he's cleaning this mess up, to capture an elusive stone-age cave rat.

What fun.

He just has to avoid the occasional poisonous frog.

Oh yes. And the wickedly clawed condors.

The electric eels. And a very nasty line in thirsty vampire bats.

So you can see Harry could do with some help.

All you'll have to help you are your wits and some gas-filled balloons to bridge the wider chasms. And you'll be in for the game of your life.

One thing puts Activision Software out on its own. The way you go on running it month after month. And Pitfall II is no exception.

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Plus excellent sprite graphics

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TURN PIKE TOAD

```
0 REM WRITTEN FOR BIG-K BY NIGEL SHARP

1 TEXT:GRAB:HIMEM £3400

2 DATA 1,2,1,1,1,1,1,6,1,1,1,1,3,1,1,1,3
,1,5,6

3 RESTORE:FOR A=1 TO 10:READ NO%(A),LE%(
A):NEXT

90 POKE 618,10

95 TI%=2000

96 LI%=3

97 GOSUB 2000

99 RESTORE:FOR A=1 TO 20:READD:NEXT

100 A=46856:REPEAT:READB:POKEA,B:A=A+1:U
NTILB=99

101 :

102 :

103 REM ************ U.D.G'S ******

104 :

105 :

110 DATA 0,0,0,0,0,63,59,4,0,0,15,20,36,
63,63,0,0,0,48,40,36,63,61,

2

120 DATA 0,0,3,5,9,31,23,8,0,0,60,10,9,6
3,63,0,0,0,0,0,0,63,55,8

130 DATA 0,7,4,4,61,63,54,9,0,47,47,47,4
7,63,45,2,0,63,63,63,63,63,

63,0

140 DATA 0,62,62,62,62,62,54,8,0,31,31,3
1,31,31,27,4,0,61,61,61,61,

63,45,16

150 DATA 0,56,8,8,47,63,27,36,2,17,15,3,
3,7,43,25,16,34,60,48,48,56

,53,38

160 DATA0,0,0,4,2,33,16,0,0,0,8,8,4,0,2,
58,0,17,17,16,0,14,10,14,34

,4,0,2,58,18

170 DATA16,18,14,8,46,2,14,0,17,34,42,58
,35,32,4,8,8,0,10,10,40,0,1

6,16,16,0

180 DATA 16,4,34,33,16,0,0,0,99

181 :

182 :

183 REM ****** TRAFFIC STRINGS *****

184 :

185 :

190 FOR A=1 TO 4:READ Y%(A):NEXT:DATA 9,
17,13,21

200 FOR A=1 TO 8:READ VE$(A):NEXT

210 DATA"abc","abc",qhiiij,qhiiiiij,"def
","def",kiiilm,kiiiiilm

220 FOR A=1 TO 10:SP$(A)="":FOR B=1 TO A
:SP$(A)=SP$(A)+"  ":NEXT B,

A

230 FOR A=1 TO 7:CO$(A)=CHR$(A):NEXT

240 FOR A=1 TO 2:REPEAT

250 IR$(A)=IR$(A)+CO$(RND(1)*7+1)+VE$(RN
D(1)*4+1)+SP$(RND(1)*4+1)

260 UNTIL LEN(IR$(A))>50

270 NEXTA:FOR A=3 TO 4:REPEAT

280 TR$(A)=TR$(A)+CO$(RND(1)*7+1)+VE$(RN
D(1)*4+5)+SP$(RND(1)*4+1)

290 UNTIL LEN(TR$(A))>50

300 NEXT:X%=20:Y%=25

301 :

302 :

303 REM ********** SCREEN **********

304 :

305 :

310 POKE £26B,10:CLS:INK 7:POKE 48040,8
```

TURNPIKE TOAD for Oric

This toad's really in a hole. You could say he's in a jam — a traffic jam. Careful as you go as you help this middle of the road toad hop, skip and jump his way safely to the other side.

by Nigel Sharp

```
315 PLOT 1,0,"TIME:":PLOT 0,1,CHR$(2)+"n
o  no  no"

316 PLOT 0,2,CHR$(2)+"no  no  no"

320 FOR A=1 TO 4:PLOT 1,Y%(A),LEFT$(TR$(
A),38):PLOT 1,Y%(A)+1,LEFT$
(TR$(A),38)

321 A$="
    "

322 PLOT 1,25,A$:PLOT 1,26,A$

325 IF ZZ% THEN PLOT OX%,OY%,"  ":PLOT O
X%,OY%+1,"  ":ZZ%=0

330 NEXT:DOKE £276,TI%:A$=KEY$

331 :

332 :

333 REM ******** MAIN LOOP ********

334 :

335 :

340 REPEAT:KE$=KEY$:IF KE$="" THEN KE%=0
:GOTO 390

350 OX%=X%:OY%=Y%:KE%=ASC(KE$)

360 X%=X%+(KE%=8 AND X%>1)*2-(KE%=9 AND
X%<37)*2

370 Y%=Y%+(KE%=11)*4-(KE%=10ANDY%<25)*4

375 IFSCRN(X%,Y%)>32ORSCRN(X%+1,Y%)>32TH
EN560

380 PLOT OX%,OY%,"  ":PLOT OX%,OY%+1,"
"

390 PLOT X% 1,Y%+1,CHR$(2)+"no":PLOT X%-
1,Y%,CHR$(2)+"no"

400 IF Y%=5 THEN 1000

410 IF KE%<12 AND KE%>7 THEN SOUND 1,100
,0

420 IF KE%<12 AND KE%>7 THEN PLAY 1,0,1,
100

430 :

440 :

450 REM ******** MOVE TRAFFIC ******

460 :

470 :

500 R%=INT(RND(1)*4)+1

510 IF R%>2 THEN 530

520 LE%=LEN(TR$(R%))-2:TR$(R%)=RIGHT$(TR
$(R%),LE%)+LEFT$(TR$(R%),2)

:GOTO 540

530 LE%=LEN(TR$(R%))-2:TR$(R%)=RIGHT$(TR
$(R%),2)+LEFT$(TR$(R%),LE%)

540 PLOT 1,Y%(R%),LEFT$(TR$(R%),38):PLOT
 1,Y%(R%)+1,LEFT$(TR$(R%),3
8)

550 IF DEEK(£276)<TI% THEN  PLOT 6,0,STR
$(INT(DEEK(£276)/100))+" "

555 PLOT 0,0,4:PLOT 6,0,4

560 S1%=SCRN(X%,Y%):S2%=SCRN(X%+1,Y%)

570 UNTIL(S1%<>110ANDS1%<>32)OR(S2%<>32A
NDS2%<>111)ORDEEK(£276)>TI%

575 :

580 :

585 REM ********** SPLAT! *********

590 :

595 :

600 X%=X%-3:A$=CHR$(8)+CHR$(1)

610 PLOT OX%,OY%,"  ":PLOT OX%,OY%+1,"
"

620 PLOT X%,Y%,A$+"pqrs"+CHR$(10):PLOT X
%,Y%+1,A$+"tuvw"+CHR$(10)

630 PLAY 0,1,0,1000:FOR A=31 TO 0 STEP -
1

640 SOUND 4,A,0:NEXT
,
650 LI%=LI%-1:IF LI%=0 THEN WAIT 200:RUN

670 PLOT 4*LI%+1,1,"  ":PLOT LI%*4+1,2,"
  ":X%=20:Y%=25:ZZ%=1:GOTO
320

680 :

690 :

700 REM ********** OTHER SIDE ******

710 :

720 :

1000 PLAY 1,0,1,5000

1005 SC%=SC%+DEEK(£276)/100

1010 FORA=1TO10:MUSIC1,3,NO%(A),0:PLAY1,
0,1,LE%(A)*500:WAITLE%(A)*7
:NEXT

1050 PLOT 10,0,"SCORE:"+STR$(SC%):PLOT 1
6,0,4

1060 TI%=TI%-100

1070 OX%=X%:OY%=Y%:X%=20:Y%=25

1080 ZZ%=1:GOTO 320

1090 :

1091 :

1092 REM ********** TUNE **********

1093 :

1094 :

2000 RESTORE:FOR A=1 TO 217:READ D$:NEXT
 A

2005 FOR A=1 TO 37

2010 READ N1%,N2%,OC%

2020 IF N1% THEN MUSIC 1,4,N1%,0

2025 MUSIC 2,OC%,N2%,0

2030 IF N1% THEN PLAY 3,0,1,1000 ELSE PL
AY 2,0,1,1000

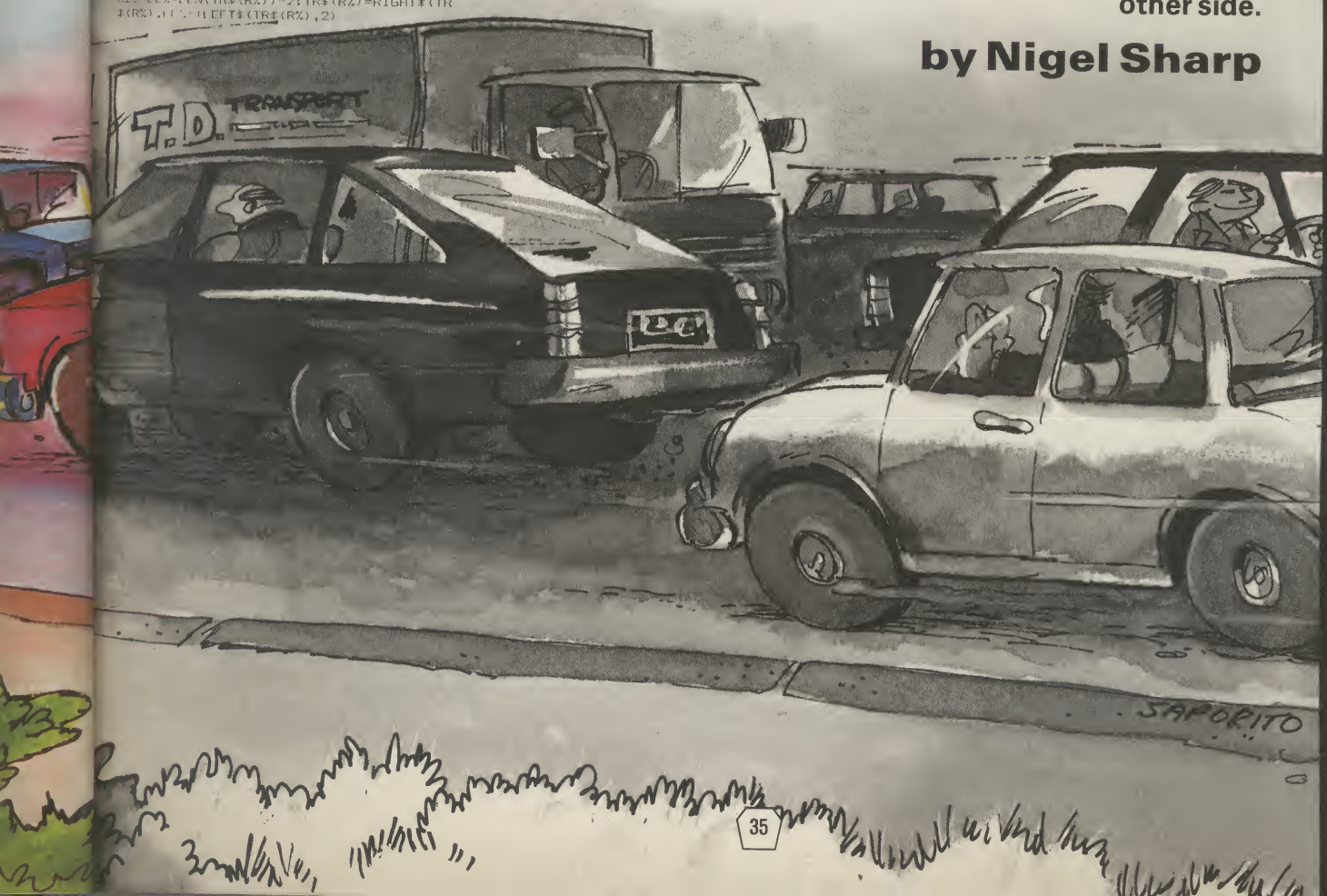
2040 WAIT 10:NEXT:RETURN

2050 DATA 5,1,1,1,5,1,1,8,1,1,5,1,5,1,1,
1,5,1,1,8,1,1,5,1

2060 DATA 6,1,1,6,5,1,5,12,0,5,3,1,3,10,
0,0,1,1,0,5,1,0,1,1,6,1,1,6
,5,1

2070 DATA 5,12,0,5,3,1,3,10,0,0,1,1,0,5,
1,0,1,1,8,10,0,8,1,1,6,5,1,
6,1,1

2080 DATA 5,10,0,5,1,1,3,12,0,3,3,1,1,1,
1,0,5,1,0,8,1,0,5,1,0,1,1
```



Hill MacGibbon

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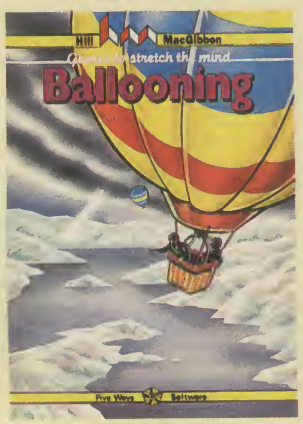

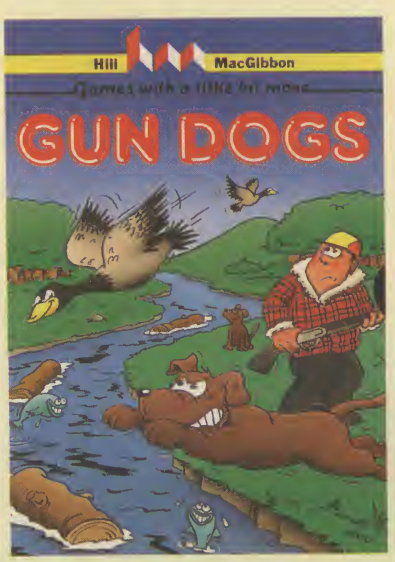

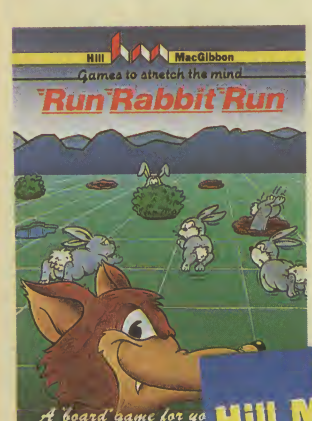

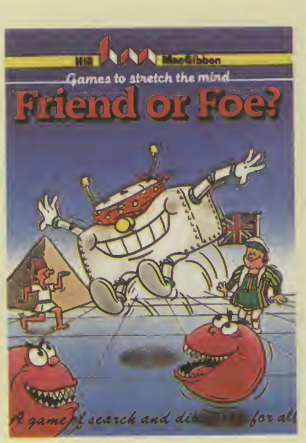

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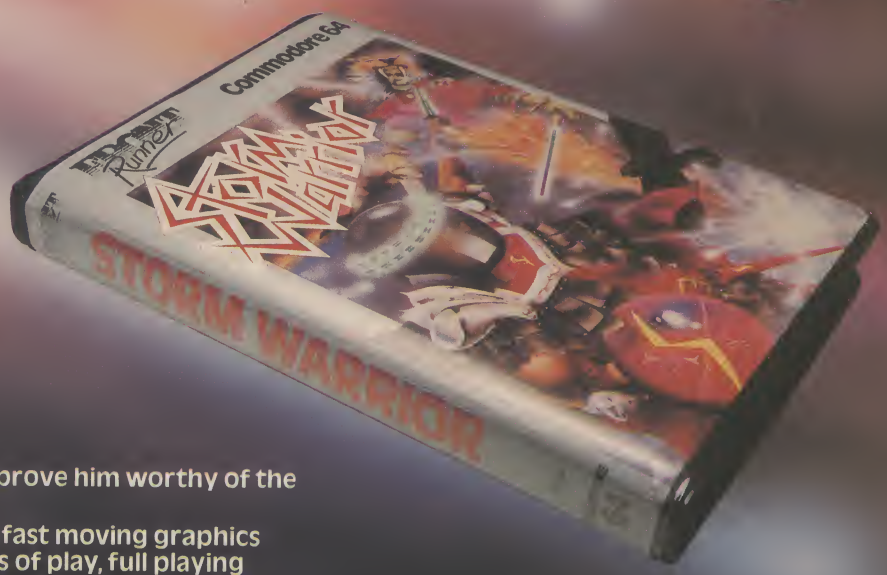

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ON THE TRAIL OF THE BOUNTY HUNTER

IT'S A DOG'S LIFE

In the future of this galaxy few jobs are considered more dirty or despicable than bounty hunting. The dregs of criminal society, however, have to be caught and the task has fallen to the Strontium Dogs, mutant outcasts from 'normal' society. Johnny Alpha is the best there is. STEVE MacMANUS examines the background of this remarkable man.

IN THE BEGINNING there was a cult comic, 2000 AD, and its creation, a mean 'n moody anti-hero called Johnny Alpha. And wise men far away studied the character and said to themselves: "Herewith the raw material for an acey-doocey computer game!".

Time was when a criminal could commit various acts of evil and hide forever in an expanding galaxy. That was before the coming of the Strontium Dogs — bounty hunters of the 22nd Century.

Strontium Dogs have to be good because, in their job, only the best survive. Every fugitive from justice fears their shadow, none more so than the one cast by the man they call Johnny Alpha. To most he is a cold-hearted killer, a freak with a reputation of always bringing back his bounty, dead or alive. In truth he is just a man doing his job, one forced on him by cruel fate and the mutating effects of Strontium 90.

The Johnny Alpha story begins in 2150 A.D., just after the Great War on Earth. Strontium 90, a radioactive isotope present in nuclear fallout had 'warped' or mutated large sections of the populace. Inwardly they were the same as other people but their physical mutations attracted widespread loathing and disgust. They quickly became targets for hatred and prejudice.

One Nelson Bunker Kreelman fuelled the gathering anti-mutant feeling by passing a series of laws designed to degrade and harass the fallout victims. But Strontium 90 knew no politics and Kreelman's bigotry secretly rebounded on him when he discovered that his own son was a mutant.

The boy's name was Johnny. In appearance he looked completely normal — except for his eyes. They could emit Alpha Rays enabling him to see through solid objects and, it was said, lay bare a man's soul.

When Johnny's mutation was discovered his father had him imprisoned, but at the age of twelve Johnny escaped and joined the newly created Mutant Army, established to fight for mutants' rights across Britain.

By now, Kreelman had banned mutants from all forms of employment and any areas inhabited by the normals. In retaliation, the Mutant Army stormed the British Parliament. Although they achieved initial success Kreelman's forces soon overcame them and Johnny, along with his fellow mutant leaders, was sentenced to death.

However, escape soon followed and Kreelman was forced to resign under threat of disclosure that one of the mutant generals was his own son.

A swift settlement of the war followed and, in return for amnesty, the generals agreed to leave Earth for good. Many of their loyal troops chose to follow them into exile; some to settle on other planets, others to lose themselves in the endlessness of space.

A few of the toughest joined a new agency set up by the Galactic Crime Commission. The job was one the norms would not touch — working as Search/Destroy agents hunting the scum of the galaxy. Soon people had a new name for the mutant agents — Strontium Dogs. To have one on your trail means certain capture, even death if he is holding a termination warrant.

Johnny Alpha was one of the first to join the agency but prefers to spend most of his time in the field, trusting only his awesome array of weapons, his norm partner Wulf and their travelling companion, the highly-strung Gronk.

Johnny Alpha and his companions have undertaken many weird assignments, like a journey into Hell itself. But, for a man whose life has been spent fighting the twin evils of hatred and ignorance, a duel with Old Nick was probably . . . just routine.

ON THE TRAIL OF THE BOUNTY HUNTER

The story of *Strontium Dog* — the computer game — begins in that remote corner of the galaxy known to all as Southampton. To be truly accurate it begins in a remote corner of Southampton known to some as the offices of Quicksilva, the self-styled Game Lords. Here, in a remote corner of the offices, Creative Design Executive Mark Eyles (and a few others, who wish to remain nameless) sat reading their weekly intake of thrill-power, 2000 AD.

For some time Mark had considered the many fantastic characters that appear in 2000 AD as prime material to base a computer game round, it was just a matter of choosing the best. First choice was *Judge Dredd*, the comic's top character and favourite with the readers (or Earthlets) almost since the very first issue. Unfortunately, powerful money moguls in a land far away, which we'll call America, had already got most of the *Judge Dredd* merchandising tied up. Second choice was *Strontium Dog*, coincidentally the second most popular character with readers and one of the longest surviving 2000 AD series.

With the decision to go with *Strontium Dog* agreed on by all at Quicksilva, Mark then contacted the editorial staff of 2000 AD with some rough ideas to gauge their reaction. This proved positive and, with the official go-ahead given by 2000 AD's publishers, IPC Magazines, Mark began work on a basic concept for the game. "We wanted something that would suit the character and be fun to play," he told BIG K's roving reporter. Eventually a working concept for *Strontium Dog and the Death Gauntlet* was ready.

THE GAME

Strontium Dog Johnny Alpha is heading for a planet full of renegades. On the way his ship is attacked by the Stix Brothers; Strontium Dogs themselves, but devoid of morals or scruples. Alpha's ship is shot down but he escapes in an escape pod and crash lands on the planet's surface. His partner Wulf and their companion the Gronk are waiting for him in the city on the other side of the planet which means Johnny must cross the hostile landscape, running the gauntlet of the hoards of hostile renegades all out to get him because he is a Search/Destroy agent . . . a Strontium Dog. The game covers this deadly journey through areas of desert, mountains and eventually the city.

ENTER THE MAESTRO

Steve Kellett is 17 years old, a university undergraduate, and knows all there is to know about programming Commodore micros. He would be a candidate for the archetypal 'whiz-kid' tag if not for a few points: He is incredibly self-confident, hyper-critical of fellow programmers' efforts and well into heavy metal music.

In fact, Steve could be looked on as the product of a whole new 'generation' of young programmers — those who have come into the field heavily influenced by the 'pioneers' of the genre. Steve's hero is Jeff Minter, who he credits for his ability to produce top quality sound into his games.

"If it hadn't been for Jeff I wouldn't have been able to program good sound," Steve told BIG K. "I asked him at a computer show how to do good sound and he told me to use variables and showed me the techniques he'd used on *Grid Runner*. I went home and churned out about ten new sound effects of my own. These were the ones I took to the Commodore User Show earlier this year to show Paul Cooper of Quicksilva, who was very impressed and told me to keep in touch."

Those sound effects plus some sample work Steve had done for Ocean and another game completed in just two weeks was sufficient proof to Quicksilva he could handle games programming for them and, ultimately, got him the *Strontium Dog* assignment.

DIGITISING THE DOG

Work actually started on *Strontium Dog and the Death Gauntlet* at the beginning of August. Steve needed about a week to really get into the idea of the game. About a day was spent thinking about the scrolling routine. "I started on the scrolling about 3.00 pm one Friday, phoned Mark at 5.00 pm to say I couldn't do it, then had it working by 7.00 pm! If I can't do something I write it down." To prove his point reams of paper were produced covered in figures.

Animation of the Strontium Dog figure was especially complex. Twelve animation steps were used for walking, another twelve for running, seven for when he falls down, five when he gets up and a further eight while he's on the ground struggling. "A total of 88 sprites just for Alpha," Steve pointed. "There's 50K of game, 42K in reality. That may seem inefficient to some people but I use a lot of memory on graphics, title pages, etc."

By the end of August the game was up and running and just needed the finishing touches added, including the sound — Steve's speciality.

Next to sound, playability comes high on Steve Kellett's priority list. "I regard myself as a very good games player. I get good very quickly on games I really like. Minter's *Sheep in Space*, for example. I played that for two weeks and could get over a million. Any of Jeff's games I find easy. However, Quicksilva's *Boogaboo (The Flea)* I cannot beat, but it's good. I like 'cute' games."

A.D. — AFTER THE DOG

His work on the *Strontium Dog* over Steve returns to college where he'll continue to ". . . slap ideas down on paper" until he gets home at Christmas and back to his computer (he doesn't have access to one at college).

Steve has definite plans to stay with a career in programming when he graduates and has lots of ideas of his own. "But nobody wants zap 'em up games," he complains. "I love them and think there's still lots to be done with them.

RICHARD BURTON

Alien terror lurks on a planet of per tion stills from STRONTIUM DOG AND DEATH GAUNTLET.

STRONTIUM DOG — THE KILLING

Meanwhile, in the place called Preston, strange but similar ideas were floating through the mind of John Williams, managing director of Channel 8 Software.

Like Mark Eyles, John is an avid fan of *2000 AD*. He too could see the potential in some of the characters for computer games. But it wasn't until an idea for a new space game came his way that things began to move. "The game was good," John told BIG K, "but it lacked a theme and a direction." He didn't have to go far to find both. *Strontium Dog* was considered to be ideal but John also took it a stage further. Instead of basing an original game round the character of *Strontium Dog*, like Quicksilva, John decided to use the theme and elements of an actual episode of *Strontium Dog* that had appeared in *2000 AD*.

The unenviable job of transferring an existing story onto the computer screen was given to Paul Hargreaves, who lives in Leyland, near Preston. At 15, Paul is already a programmer of some experience with his first game, *Borzak*, already out from Channel 8 Software.

Work began on the game in April and continued through till August. Paul worked on evenings during term time (after homework, of course!) and weekends. During school holidays he was able to work in Channel 8's offices.

THE GAME

On a planet in the very centre of the Milky Way the cruel Despots of Zed perpetuate an age-old ritual known simply as The Killing. Each year participants from all over the galaxy gather to take part. The objects is simple: to kill every other participant. The sole survivor is in line for vast riches. The ritual takes place in a city which is cleared to become a vast killing ground.

Participants in The Killing are nearly all murderers and criminals with bounties on their heads — which naturally attracts bounty hunter Johnny Alpha. His reason for taking part is to catch — dead or alive — as many of the criminals as possible and collect the bounty on each. His weapons: his trusty blaster and electro-flares.

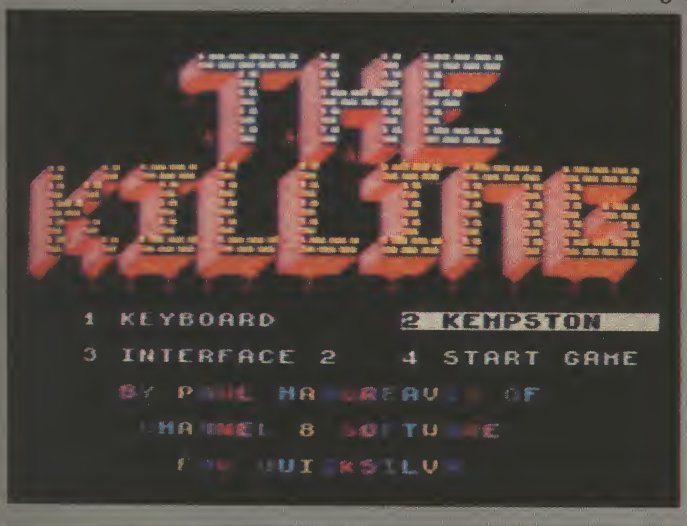
Paul's visualisation is accurate and superbly detailed. It incorporates many scenes from the actual 2000 AD story plus some very flashy screen routines.

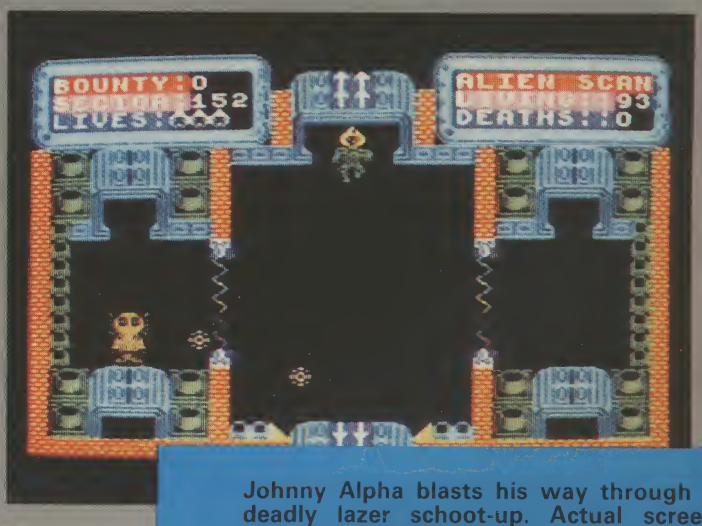
By late August the game was finished and both John and Paul travelled down to London to show the game to IPC Magazines, the copyright owners and — it should be said — also the publishers of a certain computer magazine that you are reading at this moment!

BIG K's expertise (ahem) was called in for evaluating the quality of the game and the magazine's computer room was quickly pressed into service for a 'screening' of Channel 8's production. It was soon evident, from the graphics alone, that the company was onto a winner. Some of Tharg's droids were summoned from the nearby Command Module to add their enthusiastic approval of the game. BIG K was able to assure IPC Magazines that their character was in good hands.

But how to market the new game? Quicksilva had just pipped Channel 8 to the post in acquiring the licence to *Strontium Dog* and already had their own game well into development. At BIG K'S urging, John quickly got in touch with Quicksilva to see if some compromise could be reached.

About a week later the two companies met. It was clear to both sides that they each had a good product and that they should co-operate. Quicksilva agreed to take on the marketing of both games, with full credit being given to Channel 8 and Paul Hargreaves on *Strontium*





Johnny Alpha blasts his way through a deadly lazer schoot-up. Actual screen scenes from THE KILLING.

Dog and the Killing. Channel 8, in return, would provide technical and information back-up on its game. The deal worked out well. It meant that the top two micros would be covered by *Strontium Dog* games: Commodore 64 (*The Death Gauntlet*) and Spectrum 48K (*The Killing*).

THE QUIET ACHIEVER

Paul Hargreaves is quiet, unassuming and very talented. Like Steve Kellett he is one of the 'new breed' of programmers; self-confident, self-taught and free from the constraining influences of the arcade video games. An influence that produced so many derivative games in the 'early days' of computer gaming. Like Steve is to the Commodore 64, Paul is a loyal Spectrum man.

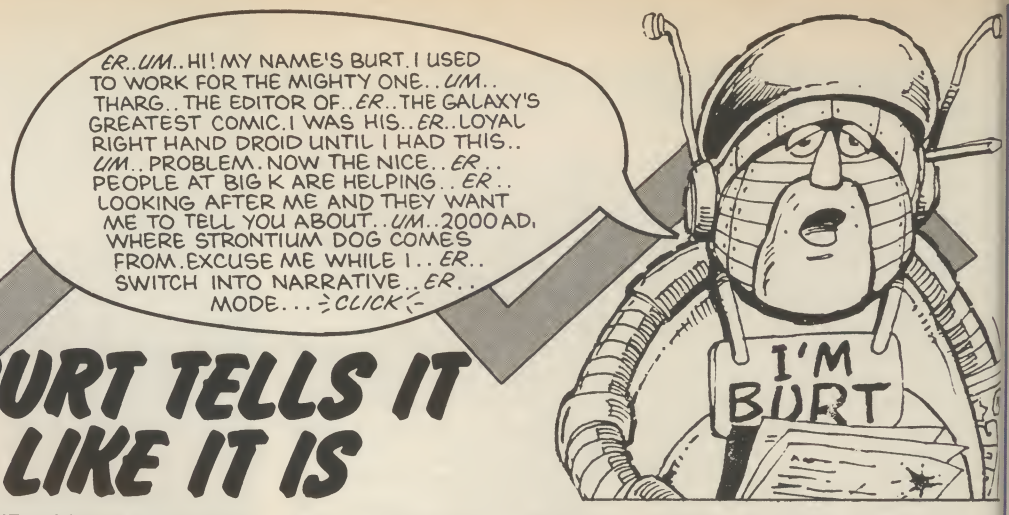
He began programming about two years ago on a ZX81 which he bought . . "only to learn on," and discarded after a month when he got his first Spectrum. "I'd always intended to get a Spectrum right from the start," he told BIG K.

He has no one he particularly admires for their programming but has a favourite software company in Ultimate. "I particularly like *Sabre Wolf* at the moment," he said.

Paul considers graphics to be the most important part of any game and develops all his own routines — some very impressive ones are on display in *The Killing*.

With some years of education still ahead of him Paul isn't thinking too much at the moment about continuing a career in games programming. At the moment he's working on developing his machine code techniques (*The Killing* was written in BASIC and then compiled) for his next game.

Strontium Dog and The Killing is a start that promises great things from Paul. Current 'superstars' would do well to keep one eye on him at all times!



BURT TELLS IT LIKE IT IS

IN THE mid-70's Earth was a pretty dull place. Unbeknownst to the comic-buying public of that time a deadly parasite was at work.

Then, early in 1977, a spacecraft from the star system of Betelgeuse landed on London's South Bank. It contained an awesome being — the Mighty Tharg. Tharg had but one mission: to bring Thrill-power to Earth comics.

This he accomplished in one bold stroke by producing 2000 AD; a comic so new, so innovative that it shattered all previous conceptions of what comics should be like. It contained characters, sights, experiences and situations that human minds could barely cope with. It was Thrill-power personified!

Young natives of Earth, or 'Earthlets' as Tharg dubbed them, flocked to the new publication, revelling in every picture and every word. An army of droids and robots had been created by Tharg specifically to produce all the strips in 2000 AD. One character, *Judge Dredd*, grim lawman of the 22nd Century, was an instant mega-hit. Many others followed: *M.A.C.H. One, The Harlem Heroes, Old One Eye*, the hag dinosaur, the list went on.

As the years passed 2000 AD grew in stature. Young Earthlets continued to discover it while early readers stayed loyal to the Mighty Tharg as they grew older. For the first time ever a comic appealed to young and old alike.

Tharg became a figure of great authority and power. Betelgeusian phrases worked their way into the English language: *Borag Thungg* — Galactic greetings; *Zarjaz* — Fantastic; *Scrotnig* — Thrill-powered; *Splundig vur Thrigg* — Farewell.

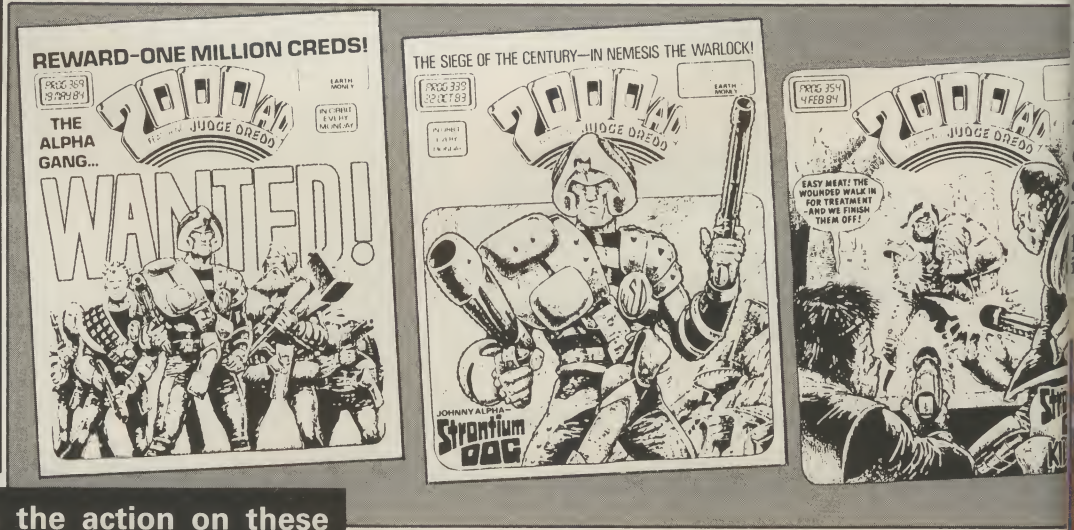
In 1978 a spin-off comic was produced called Star Lord. It didn't last very long but from it came two series that rapidly became 2000 AD hits; *Ro-Busters* and . . . *Strontium Dog*.

The adventures of the mutant bounty hunter soon came second only to *Judge Dredd* in popularity. Much of this can be put down to the Mighty Tharg's efforts in keeping the same talented creative team on the series from then to now: script robots John Wagner and Alan Grant and art robot Carlos Ezquerra (who drew this issue's cover and the pack art for both games).

Times continued to move on bringing more classic series to 2000 AD: *Robo-Hunter, Ace Trucking Co., Meltdown Man, A.B.C. Warriors, Nemesis, Rogue Trooper, D.R. & Quinch*.

In 1984 2000 AD has passed its 400th issue, its popularity greater than ever. Earthlets from eight to eighty read and enjoy it every week. There are 2000 AD societies on college campuses all over the country. Rock groups The Human League and Madness are acknowledged fans. Tharg's creations have spawned books, badges, T-shirts and games (computer and non-computer variety).

Oh, yes, and that deadly parasite that was at work in 1977 can still be found. It's called a *Thrill-Sucker* and I . . er . . um . . had something to do with . . er . . it. But that's another story.



Johnny Alpha fronts the action on these cover reproductions of 2000 AD.

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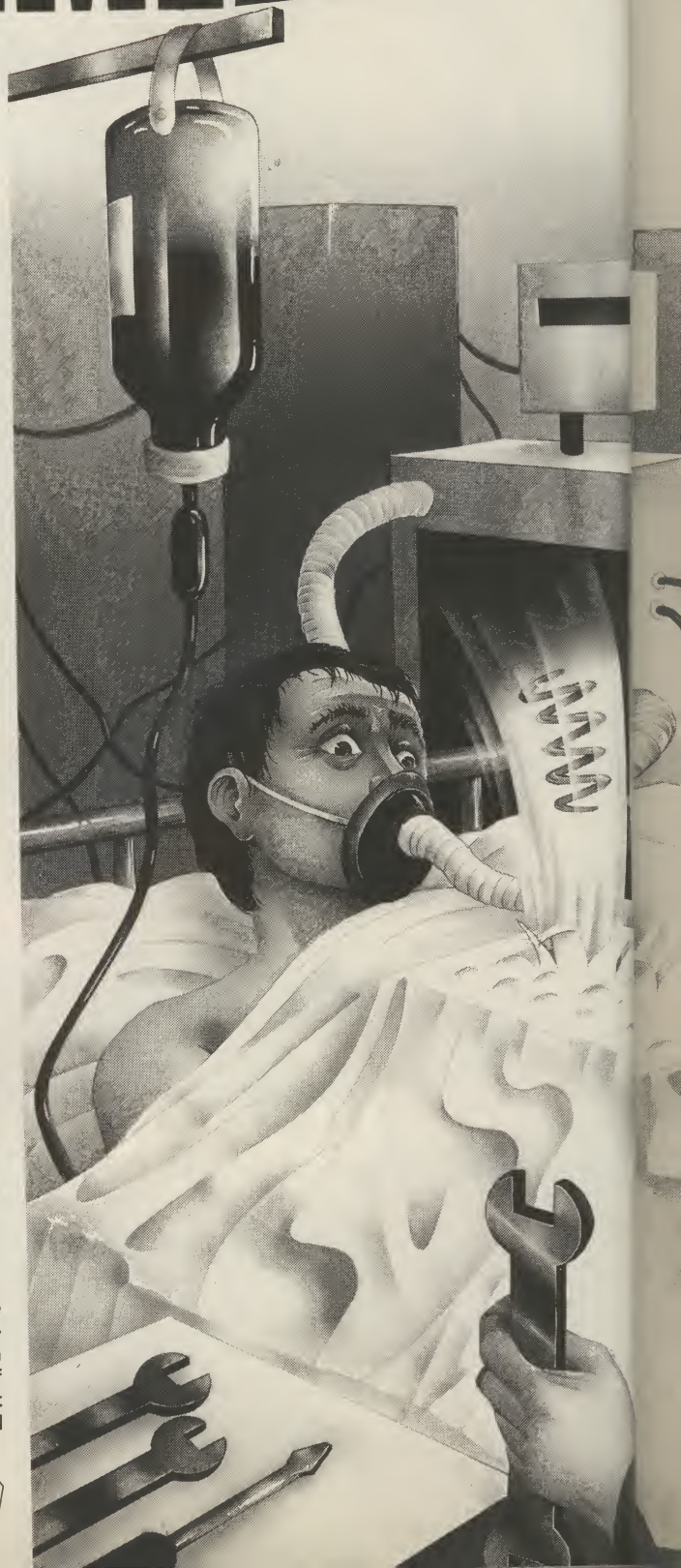
GREAT VIDEO DS OF OUR TIME ...And cd

We're not going to join those old fogies who constantly tell you that too much computer game playing can turn you into a mindless green zombie with purple boils. No, but we do say that some very real health hazards do exist in gaming if you don't take care. JOHN CONQUEST, wounded in the line of BIG K reviewing duty, diagnoses the dreaded Video Wrist . . .



A while ago I started noticing a slight ache in my wrist, a tender sensation at the base of the thumb and an occasional twinge of real pain. I worried about it off and on for a week or two while it got steadily, though not cripplingly, worse until one day I jerked my wrist rather suddenly and, man, it exploded! Really agonising. White-lipped and trembling I staggered to my local health centre (Drs White, Lipped and Trembling), where I discovered that I had De Quervain's Disease, otherwise known as tenovaginitis, otherwise known as *Video Wrist*.

Actually Video Wrist is only one manifestation of *tenovaginitis*, as it's also fairly common among DIYers — from prolonged sawing, hammering and screwdriving — sportspeople, especially windsurfers, and mothers without washing machines, from wringing out nappies. It's an inflammation of any tendon sheath, most commonly in the wrist and hands, from over-use in repetitive movements.

Its big brother, *tenosyvanitis*, excessive-use injury, is probably not going to crop up much among computer folk. Video Wrist is a matter of repeated mild irritations of the tendon running over the radial styloid, involving the muscles that move the thumb, the abductor pollicis longus and the extensor pollicis brevis. Rotate your thumb and you'll see these guys in action. When you work a joystick, particularly one with handle and fire control, you put all this stuff under tension for extended periods, subjecting it to tiny traumatic movements and stresses. Do this enough and you'll have Video Wrist.

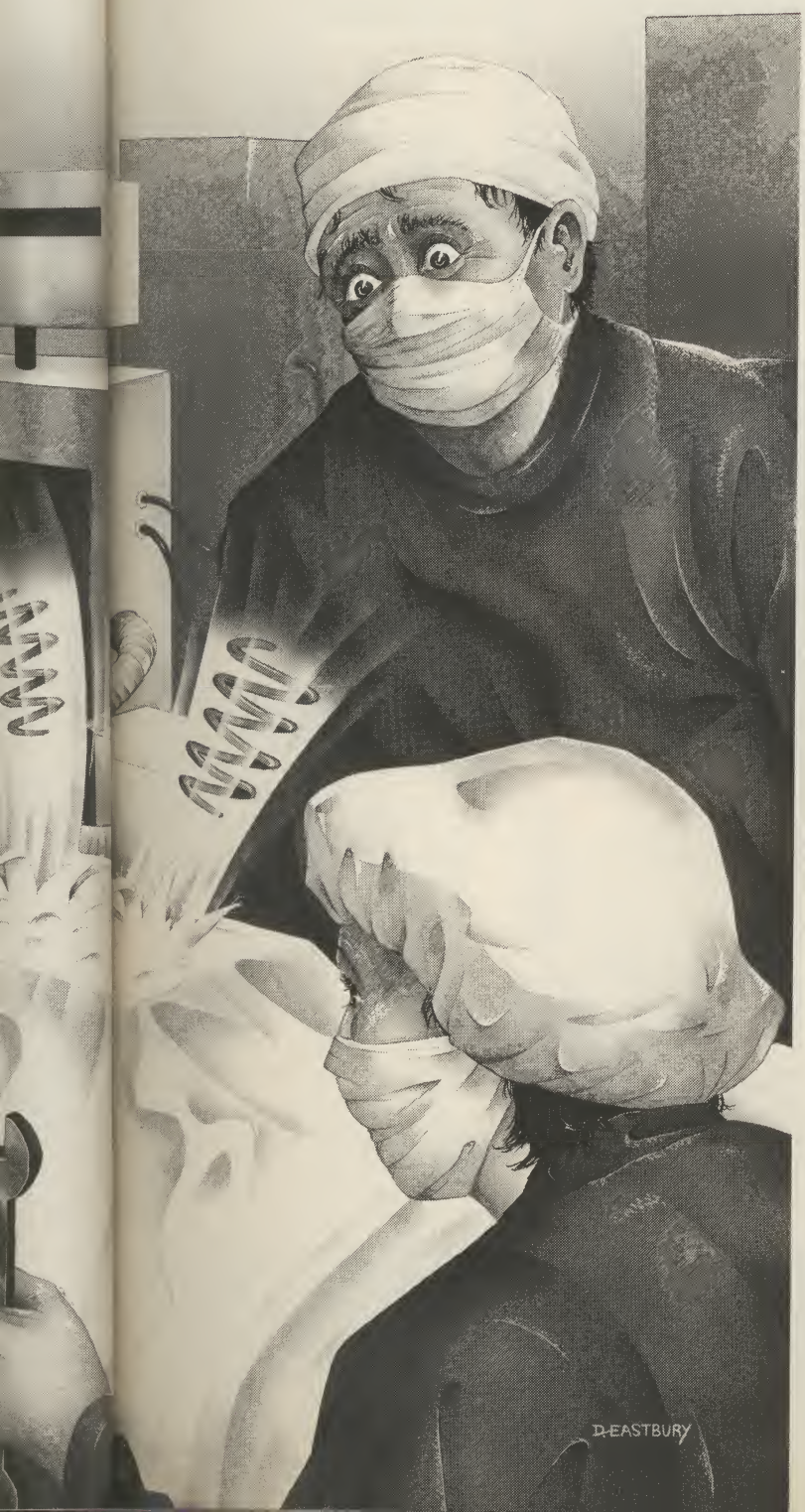
Curing it is pretty straightforward. There's a whole range of those non-steroidal, anti-inflammatory agents — glorified aspirins — which are about the most investigated group of medicines around. Just as well because they all have side effects which your doctor should make you fully aware of. Oh, and you have to stop using a joystick for a week or two. Well, you didn't expect the cure to be easy, did you? If I'd left my problem much longer, or hadn't responded to the pills, then the next step would have been an injection of cortisone under anaesthetic directly into the tendon sheath. Things would have got a lot worse before they got better, with at least 24 hours of pretty nasty pain, but results are pretty well guaranteed. This is a very heavy duty solution, though.

So there you have it — how I caught Video Wrist and lived to tell the tale. Not the deadliest disease going, but unpleasant enough. If you get any of the symptoms — aches, twinges or whatever down where the thumb runs into the wrist — it really is a good idea to get it sorted out right away because it won't disappear of its own accord; not unless you manage to immobilise your wrist completely for a week or two, which hardly sounds practical. And if you do leave it, it'll only get worse and the treatment could end up being very painful.

DISEASES

collapse ware

Listen, is it just me? Do I have some kind of electronic jinx? Am I computer-unfriendly? This here is an appeal to BIG K readers to tell me that I'm not alone in having a pile of non-functioning electronic junk. Hear my story (it's sad but true) and then let us have yours.



Easily the most expensive of my write-offs is a CBS Colecovision. How I loved that machine and it's well possible that I loved it to death. Last Christmas I took it to a festive house party, every member of which became a total all-out *Ladybug* addict. I mean, that machine was running at 12-hour stretches day after day (well, it got dark early, didn't it?). It took another terrible hammering when *Baseball* came out and in between was being regularly thrashed. Now it doesn't want to know. After half an hour or so it gets tired and despondent, the screen starts jumping, the colours go weird, the controls won't respond and it's time to switch off. For all practical purposes, it's been totalled.

Pretty much the same thing happened to an Intellivision console that several people played far too much *Advanced Dungeons & Dragons* on. Neither machines' internal ventilation was up to that kind of use and something inside overheated and warped. I'm not being deliberately vague; somebody who actually knows about these things went over both of them and failed to identify exactly where the problems were. That's the trouble with this stuff; a chip that doesn't work looks exactly the same as one that does and if it's on the blink, rather than stone dead testing won't necessarily point the finger at the right culprit.

Moving along the catacomb we come to an Atari 410 Program Recorder. This little bastard avoided detection for some time because for a while I assumed that the glitch lay in Atari's notoriously unreliable cassette interface. But, as usual, the 800XL was blameless. When the guilty party was finally identified, I again assumed that we were looking at slipped recording/playback heads. Not so. As I managed to persuade Atari to replace it with a 1010 recorder, I never found out what the actual problem was, or whether it was fixable.

Normally I wouldn't take any particular notice of totalled joysticks. In my experience they are like unto the flowers of springtime, doomed to blossom for a certain season and then wither and die. My dead Colecovision controller and *Quickshot II* joystick are, therefore, hardly worthy of remark. However I do take some pride in having wiped out a *Wico Three Way*.

Those of you with 1K memories or better may well be saying to themselves, "Is this not the very same Conquest who only last August was calling the *Wico Three Way* the 'top of the range' and recommending it?" 'Tis true, friends. What can I say? For six happy months the *Three Way* did sterling work, so far superior to every other joystick that I did not hesitate to shout its praises. Then one day my fighter banked round a tight corner, I pulled it over to grab the clever points — and it strained! It jerked! It wobbled!

Now Wico's shaft bearings are about the best around, but even they are only plastic. My problem was that in six months savage use, including a period of severe *River Raid* addiction, I'd either worn a flat spot onto the bearing or thrown the springs out of true, either of which would produce the observed effects. Unfortunately a joystick that is 75% satisfactory is 100% unsatisfactory and such is the nature of the beast, there's not much that can be done about it. The only cure is a whole new joystick. To be fair to Wico, I wouldn't consider getting anything else.

OK, so I haven't done anything really spectacular, like sink an entire microcomputer, but add up a Colecovision (£99) and Intellivision (£39) console, the Atari recorder (£45), the Wico joystick (£30) and suddenly you're talking about a couple of monkeys worth, without even mentioning odds and sods like the non-loading software.

True story time: A friend of mine recently bought two complete Spectrum set-ups, including recorders, interfaces and joysticks, for the youth clubs she runs. Fortunately she bought them at Lion House in London which has a strict policy of testing everything before they let you walk out of the shop. That's how she saw two recorders and an interface being slung into the 'Return to Sender' box. We're talking brand-new stuff here, straight out of the boxes, which makes me feel that my scrap heap isn't just down to me but has a certain something to do with industry standards.

If that proposition is true then there must be an awful lot of people with similar stories to tell. Have *you* written one off . . . ? **JOHN CONQUEST**

No.7 PAC MAN (Bally-Midway, Atari)

It's the game that brought people into the arcades in droves. STEVE KEATON charts the rise and rise of a humble yellow blob that brought a whole new experience to eating.

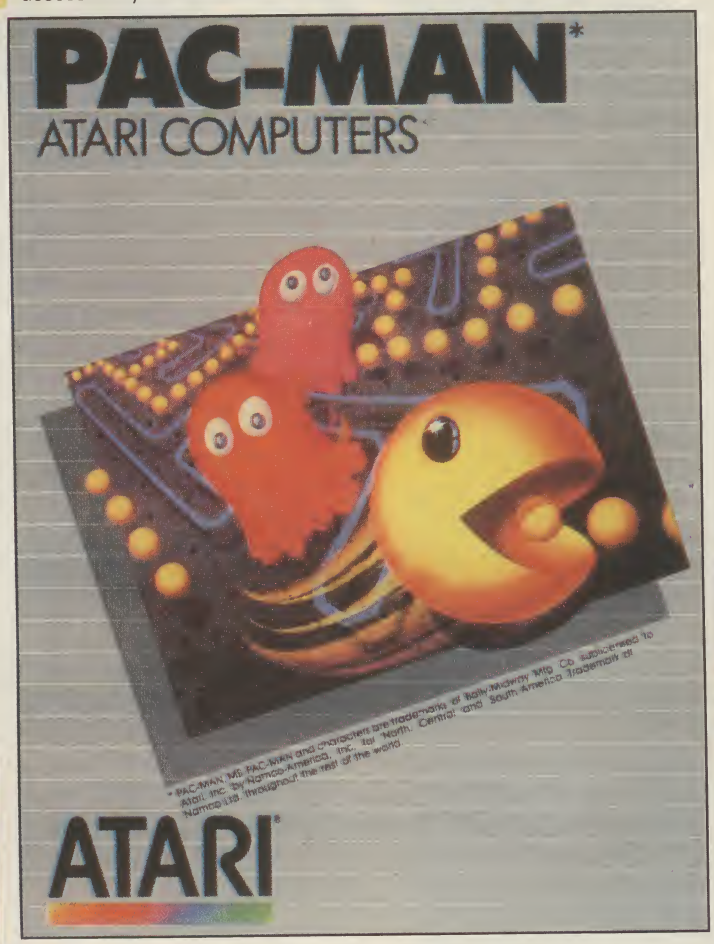
HIS NAME is legend, his curse incomparable. He's the littel yellow guy with the big mouth who opened the games closet and made joysticks respectable in mixed company. He's *Pac-Man*, the first arcade superstar! Few games can claim as many offspring. As Pac-mania raged we witnessed the birth of a whole Pac-Famly. *Pac-Man* begat *Ms Pac-Man* who in turn begat *Baby-Pac* and a whole slew of related yellow and blue merchandise. Back in '81 the world seemed peppered with little white energisers and people walked to a 'wocka-wocka' rhythm (which wasn't easy). Things got totally out of hand.

Addicts would wake ech morning beneath Pac-Sheets, drink Pac-Tea from a Pac-Mug and then dress in Pac-Apparel. There was even a *Pac-Man* cartoon show! This proved the final indignity. Upon seeing it the Pac-Phenomenon promptly pegged out and died. The gaming world was never to see its like agiain.

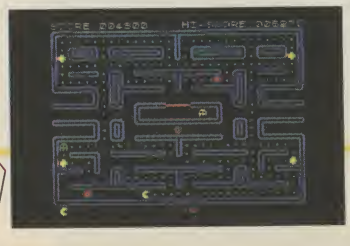
Bally Midway originally licensed *Pac-Man* from little known Nipponese creators, Namco, for introduction to the United States. The weird gobbling game found itself residing amongst banks of straight shoot 'em ups and surprisingly prospered. Then there was an explosion and *Pac-Man* rocketed to the top slot of the U.S. *Play Meter* charts. The game had caught on with a vengeance! Bally churned out over 100,000 Pac-units to sate the demand while unscrupulous rivals equalled that figure with a flood of rip-offs masquerading under such guises as *Puck-Man* and *Gobbler*. The market was saturated. Fall-out went global and for nigh on a year *Pac-Man* ruled the world.

Armchair philosophers pondered its success. The first non-violent video, some pompously declared; an expressionism, squealed others. Both claims were hooey. The little fella was just uniquely playable. A perfect combination of challenge, accessibility and audio-visual harmony. It delighted the senses and tickled the funny bone. There was nothing else like it at the time.

Pac-Man was paced to perfection. The perambulating maze monsters, Blinky, Winky, Pinky and Clyde were all deliciously geared. They begin at a sluggish pace and then speed up. Soon both Pac and monsters are travelling at the same speed, but survive too long and the Pac runs out of puff. Infuriating! The monsters' periods of edibility undulate in a similar fashion. Beginning at about 7 seconds, they dwindle to 2, then rise to 5 and then after a brief respite all but vanish. And just as you think your wrist will snap under the pressure, there's an intermission to break the tension. Pac-

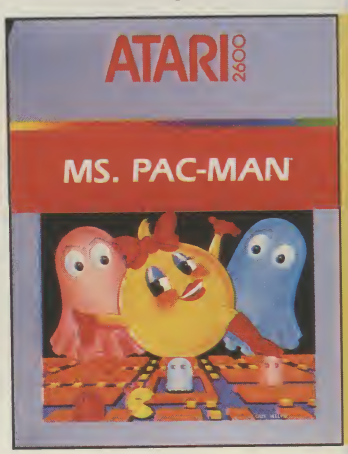


It was also predictable. Amongst the debris I laughingly refer to as my studio, I have diagrams which would ensure total success over any screen. I never use them. Why spoil a brilliant game? I felt the same about the PEEKS and POKES for Miner Willy. Others, though, had fewer scruples and Pac-Masters appeared in evey arcade. You'd often see a queue of tireless individuals who for a couple of coins could hog a machine for a weekend. Million-plus players! To combat this new breed of punter, arcade owners set about the game with chainsaws. Clumsy brain surgery on the PCB resulted in the easier sheets being all but eliminated. Some machines simply crashed at strategic points. Disgruntled, I left the arcades and waited for the little fella to come home.



It was a long wait. Atari trumpeted the arrival of an officially licensed VCS ROM and then blew it in spectacular fashion. To this day it remains their worst-ever arcade conversion, sparking off hoots of derision whenever mentioned. Any similarities between it and the Midway monster are clearly unintentional! The familiar maze went out the window, as did the cast of monsters and bonus treats (also known as 'Pac-Lunches'). It looked awful and played even worse. Despite eight game variations only one was anywhere near acceptable and even that quickly became a doddle. Pac-Fans could hardly believe their (bad) luck.

The company later redeemed themselves with a far more convincing conversion for their 400/600/800 computer range, restoring the missing features and improving the gameplay, but cynicism was rife. By way of an apology Atari converted *Ms Pac-Man* to the VCS with much greater effect. Curiously history repeated itself with the launch of the Atarisoft range. Once again *Pac-Man* was set up as a figurehead and once again Atari fum-



bled the ball. Their Spectrum version was almost as big a turkey as the earlier VCS ROM. "Our big mistake was going for 16K," a spokesman was heard to moan. Realising their mistake Atari once again turned their attention to *Ms Pac-Man*. The as yet unreleased (48K) Spectrum conversion is brilliant. Unfortunately the damage has been done. No one wants to know any more. If the Pac-Family moved in next door most people would up and sell.

The little yellow guy still hangs on in the arcades though. Battered Pac-Men can be seen propping up the walls in seedy game parlours, like video winos. Few survive in their original cabinets and most boast duff joysticks and arthritic response times. A sad state of affairs. Newer visitors, stumbling over the old fella doubtless wonder

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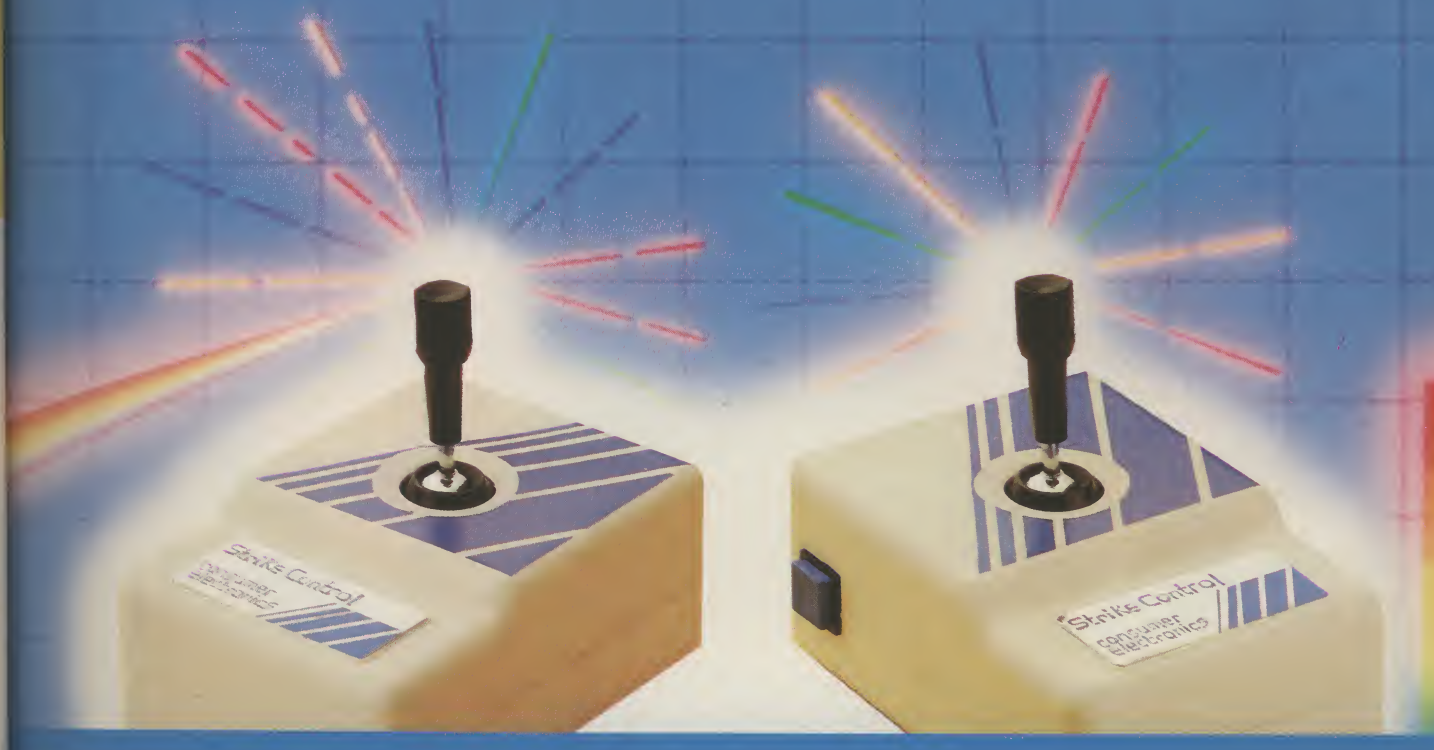

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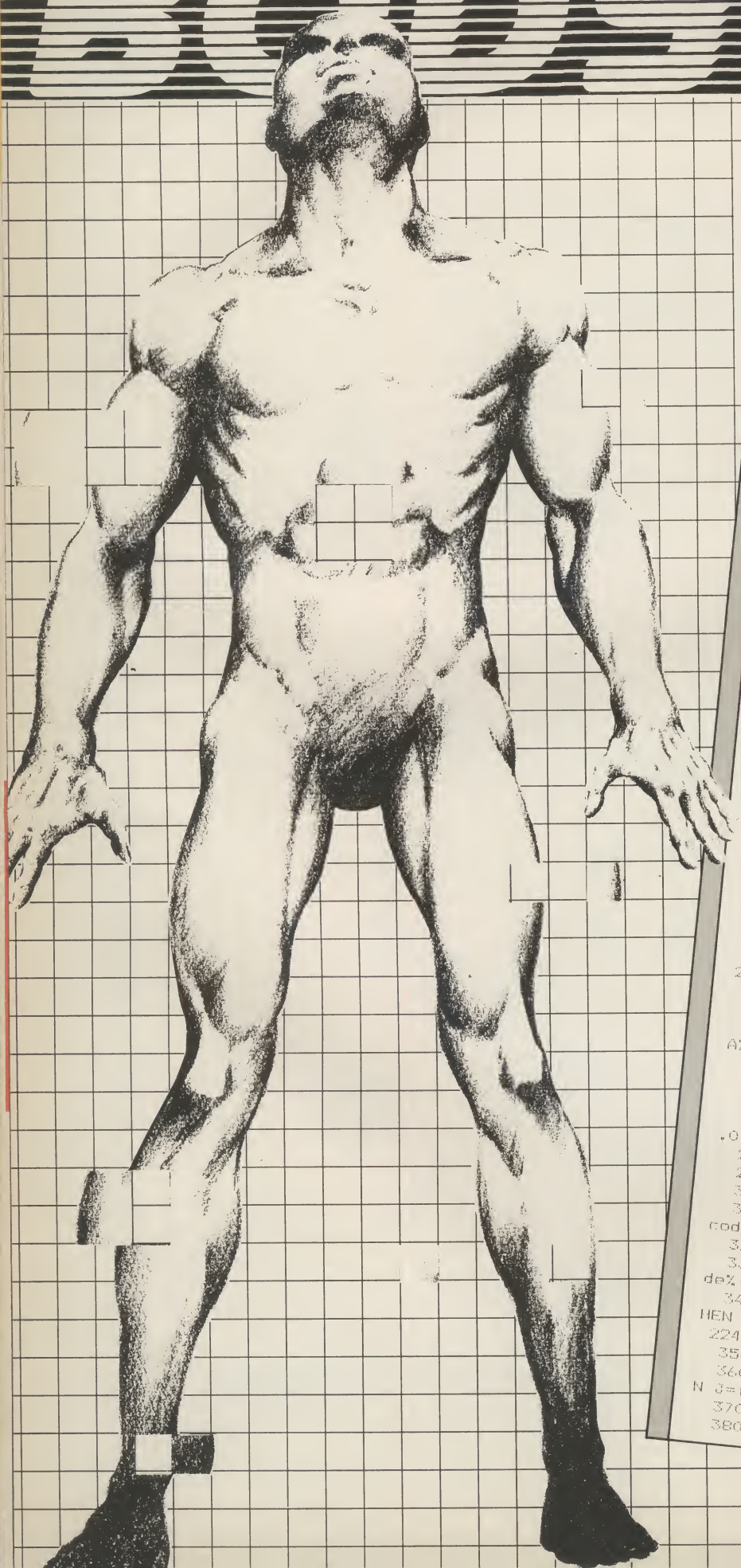
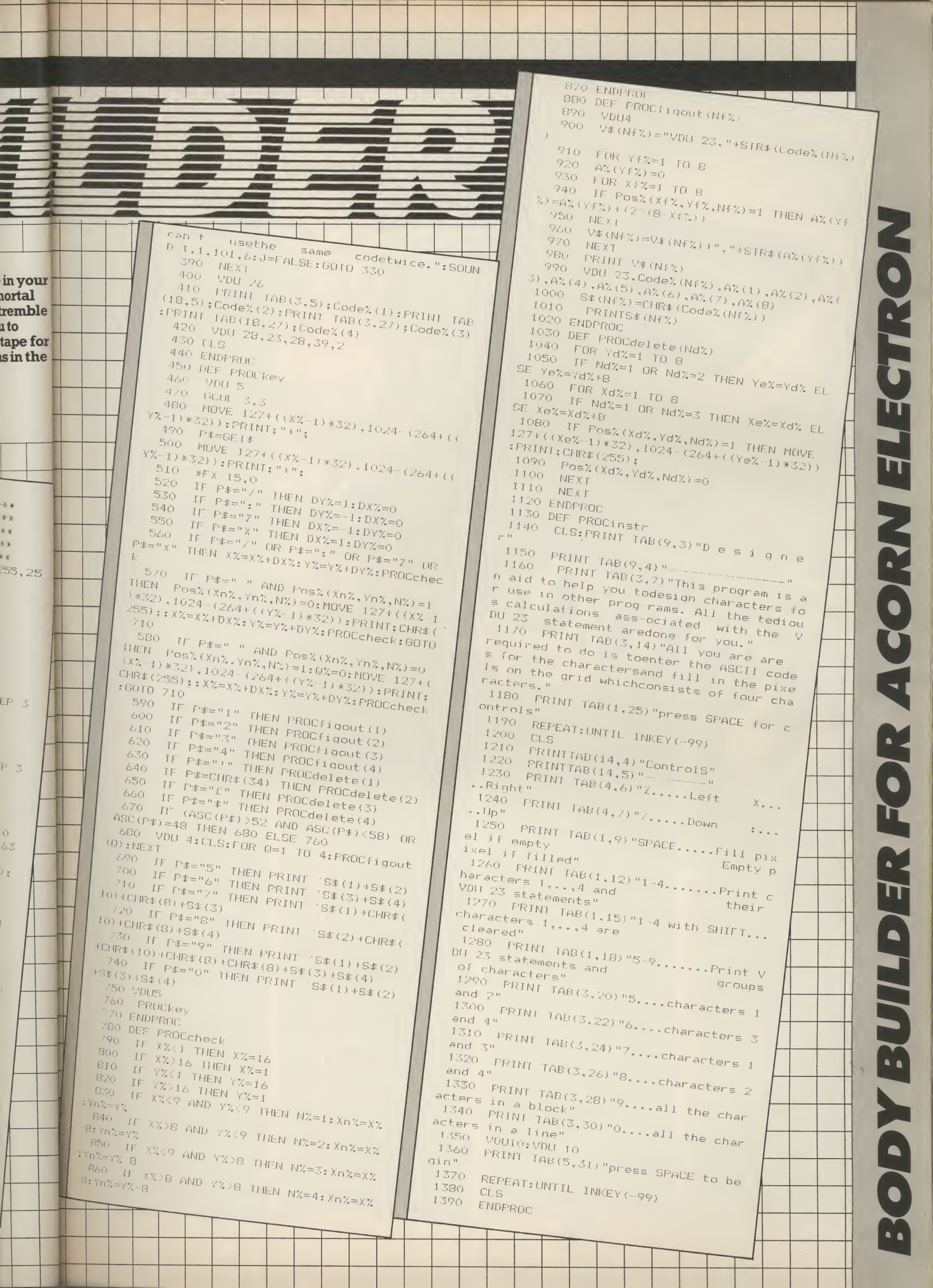


If you've a lust to design characters for use in you own games — but have until now lived in mortal terror of BBC Basic's VDU 23 statement — tremble no longer. This easy-to-use prog allows you to build up shapes on a grid and save them to tape fo some Future Point In Time. Full instructions in the prog.

by Himesh Shah

For BBC 'B'

```
>LIST,
    3  REM ************************
    5  REM ********Designer*********
    6  REM ************************
    7  REM ****by***Himesh**Shah*****
    9  REM ************************
   10  VDU 23,255,255,255,255,255,255,25
5,255,255
   20 MODE 4
   30 PROCinit
   40 PROCinstr
   50 PROCset
   60 PROCbeg
   70 PROCkey
   80 END
   90 DEF PROCset
  100  FOR I=127 TO (127+(32*16)) STEP 3
2
  110  MOVE I,255
  120  PLOT 1,0,32*16
  130  NEXT
  140  FOR Y=255 TO (255+(32*16)) STEP 3
2
  150  MOVE 127,Y
  160  PLOT 1,32*16,0
  170  NEXT
  180  MOVE 100,511:PLOT 1,54+(32*16),0
  190  MOVE (127+(32*8)),218:PLOT 1,0,63
+(32*16)
  200  PRINT TAB(3,5);1:PRINT TAB(20,5);
2:PRINT TAB(3,27);3:PRINT TAB(20,27);4
  210 ENDPROC
  220 DEF PROCinit
  230  DIM Pos%(8,8,4):DIM Code%(4):DIM
A%(8):DIM S$(4)
  240  X%=1:Y%=1:Xn%=1:Yn%=1:N%=1
  250  A%=0:DIM V$(4):J=FALSE
  260  DX%=0:DY%=0
  270  ENVELOPE 1,1,5,-8,-3,5,10,4,126,0
,0,-126,126,126
  280 ENDPROC
  290 DEF PROCbeg
  300  VDU 28,23,28,39,2
  310  PRINT      " What are the ASCII
codes for the characters?"
  320  FOR C=1 TO 4
  330  PRINT TAB(1)STR$(C)+": ":INPUT;Co
de%(C)
  340  IF Code%(C)<224 OR Code%(C)>254 T
HEN SOUND 1,1,100,6:PRINT"Only codes
224 to 254 available.":GOTO 330
  350  FOR K=1 TO C
  360  IF Code%(C)=Code%(K) AND C<>K THE
N J=TRUE
  370  NEXT
  380 IF  J=TRUE THEN PRINT "  " You
```



```
can t    usethe    same    codetwice.":SOUN
D 1,1,101,6:J=FALSE:GOTO 330
 390  NEXT
 400  VDU 26
 410  PRINT TAB(3,5);Code%(1):PRINT TAB
(18,5);Code%(2):PRINT TAB(3,27);Code%(3)
:PRINT TAB(18,27);Code%(4)
 420  VDU 28,23,28,39,2
 430  CLS
 440  ENDPROC
 450  DEF PROCkey
 460  VDU 5
 470  GCOL 3,3
 480  MOVE 127+((X%-1)*32),1024-(264+((
Y%-1)*32)):PRINT;"+";
 490  P$=GET$
 500  MOVE 127+((X%-1)*32),1024-(264+((
Y%-1)*32)):PRINT;"+";
 510  *FX 15,0
 520  IF P$="/" THEN DY%=1:DX%=0
 530  IF P$=":" THEN DY%=-1:DX%=0
 540  IF P$="Z" THEN DX%=-1:DY%=0
 550  IF P$="X" THEN DX%=1:DY%=0
 560  IF P$="/" OR P$=":" OR P$="Z" OR
P$="X" THEN X%=X%+DX%:Y%=Y%+DY%:PROCchec
k
 570  IF P$=" " AND POS%(Xn%,Yn%,N%)=1
THEN  POS%(Xn%,Yn%,N%)=0:MOVE 127+((X%-1
)*32),1024-(264+((Y%-1)*32)):PRINT;CHR$(
255);:X%=X%+DX%:Y%=Y%+DY%:PROCcheck:GOTO
 710
 580  IF P$=" " AND POS%(Xn%,Yn%,N%)=0
THEN  POS%(Xn%,Yn%,N%)=1:Q%=0:MOVE 127+(
(X%-1)*32),1024-(264+((Y%-1)*32)):PRINT;
CHR$(255);:X%=X%+DX%:Y%=Y%+DY%:PROCcheck
:GOTO 710
 590  IF P$="1" THEN PROCfigout(1)
 600  IF P$="2" THEN PROCfigout(2)
 610  IF P$="3" THEN PROCfigout(3)
 620  IF P$="4" THEN PROCfigout(4)
 630  IF P$="!" THEN PROCdelete(1)
 640  IF P$=CHR$(34) THEN PROCdelete(2)
 650  IF P$="£" THEN PROCdelete(3)
 660  IF P$="$" THEN PROCdelete(4)
 670  IF (ASC(P$)>52 AND ASC(P$)<58) OR
ASC(P$)=48 THEN 680 ELSE 760
 680  VDU 4:CLS:FOR Q=1 TO 4:PROCfigout
(Q):NEXT
 690  IF P$="5" THEN PRINT 'S$(1)+S$(2)
 700  IF P$="6" THEN PRINT 'S$(3)+S$(4)
 710  IF P$="7" THEN PRINT 'S$(1)+CHR$(
10)+CHR$(8)+S$(3)
 720  IF P$="8" THEN PRINT 'S$(2)+CHR$(
10)+CHR$(8)+S$(4)
 730  IF P$="9" THEN PRINT 'S$(1)+S$(2)
+CHR$(10)+CHR$(8)+CHR$(8)+S$(3)+S$(4)
 740  IF P$="0" THEN PRINT 'S$(1)+S$(2)
+S$(3)+S$(4)
 750  VDU5
 760  PROCkey
 770  ENDPROC
 780  DEF PROCcheck
 790  IF X%<1 THEN X%=16
 800  IF X%>16 THEN X%=1
 810  IF Y%<1 THEN Y%=16
 820  IF Y%>16 THEN Y%=1
 830  IF X%<9 AND Y%<9 THEN N%=1:Xn%=X%
:Yn%=Y%
 840  IF X%>8 AND Y%<9 THEN N%=2:Xn%=X%
-8:Yn%=Y%
 850  IF X%<9 AND Y%>8 THEN N%=3:Xn%=X%
:Yn%=Y% 8
 860  IF X%>8 AND Y%>8 THEN N%=4:Xn%=X%
8:Yn%=Y%-8
 870  ENDPROC
 880  DEF PROCfigout(Nf%)
 890  VDU4
 900  V$(Nf%)="VDU 23,"+STR$(Code%(Nf%)
)
 910  FOR Yf%=1 TO 8
 920  A%(Yf%)=0
 930  FOR Xf%=1 TO 8
 940  IF POS%(Xf%,Yf%,Nf%)=1 THEN A%(Yf
%)=A%(Yf%)+(2^(8-Xf%))
 950  NEXT
 960  V$(Nf%)=V$(Nf%)+","+STR$(A%(Yf%))
 970  NEXT
 980  PRINT V$(Nf%)
 990  VDU 23,Code%(Nf%),A%(1),A%(2),A%(
3),A%(4),A%(5),A%(6),A%(7),A%(8)
1000  S$(Nf%)=CHR$(Code%(Nf%))
1010  PRINTS$(Nf%)
1020 ENDPROC
1030 DEF PROCdelete(Nd%)
1040  FOR Yd%=1 TO 8
1050  IF Nd%=1 OR Nd%=2 THEN Ye%=Yd% EL
SE Ye%=Yd%+8
1060  FOR Xd%=1 TO 8
1070  IF Nd%=1 OR Nd%=3 THEN Xe%=Xd% EL
SE Xe%=Xd%+8
1080  IF POS%(Xd%,Yd%,Nd%)=1 THEN MOVE
127+((Xe%-1)*32),1024-(264+((Ye%-1)*32))
:PRINT;CHR$(255);
1090  POS%(Xd%,Yd%,Nd%)=0
1100  NEXT
1110  NEXT
1120 ENDPROC
1130 DEF PROCinstr
1140  CLS:PRINT TAB(9,3)"D e s i g n e
r"
1150  PRINT TAB(9,4)"-----------"
1160  PRINT TAB(3,7)"This program is a
n aid to help you todesign characters fo
r use in other prog-rams. All the tediou
s calculations  ass-ociated  with the  V
DU 23  statement aredone for you."
1170  PRINT TAB(3,14)"All you are are
required to do is toenter the ASCII code
s for the charactersand fill in the pixe
ls on the grid whichconsists of four cha
racters."
1180  PRINT TAB(1,25)"press SPACE for c
ontrols"
1190  REPEAT:UNTIL INKEY(-99)
1200  CLS
1210  PRINTTAB(14,4)"ControlS"
1220  PRINTTAB(14,5)"--------"
1230  PRINT TAB(4,6)"Z.....Left     X...
..Right"
1240  PRINT TAB(4,7)"/.....Down     :...
..Up"
1250  PRINT TAB(1,9)"SPACE.....Fill pix
el if empty                    Empty p
ixel if filled"
1260  PRINT TAB(1,12)"1-4.......Print c
haracters 1,..,4 and                their
VDU 23 statements"
1270  PRINT TAB(1,15)"1-4 with SHIFT...
characters 1,..,4 are
cleared"
1280  PRINT TAB(1,18)"5-9.......Print V
DU 23 statements and                groups
of characters"
1290  PRINT TAB(3,20)"5....characters 1
and 2"
1300  PRINT TAB(3,22)"6....characters 3
and 4"
1310  PRINT TAB(3,24)"7....characters 1
and 3"
1320  PRINT TAB(3,26)"8....characters 2
and 4"
1330  PRINT TAB(3,28)"9....all the char
acters in a block"
1340  PRINT TAB(3,30)"0....all the char
acters in a line"
1350  VDU10:VDU 10
1360  PRINT TAB(5,31)"press SPACE to be
gin"
1370  REPEAT:UNTIL INKEY(-99)
1380  CLS
1390  ENDPROC
```

BODY BUILDER FOR ACORN ELECTRON

BIG K GETS PARANOID...

A while back, reader GARETTI JOHNSON lent a home-grown Spectrum prog to a "friend" — later he was miffed, to say the least, when he discovered copies of the prog circulating locally at £1 a time. Enraged, he sat down to figure out how This Could Never Happen Again (he doesn't say what happened to the friend) . . . and here's the result.

PROTECTOR!

AFTER LENDING my latest masterpiece to a friend for a couple of days, I was amazed and annoyed to find copies of it being sold for a pound each.

This caused me to wonder if there was a way that BASIC programs could be safeguarded from copying.

Ploughing through several copies of the latest weekly and monthly computer rags, I found to my surprise that not one article had been written for the Spectrum about program protection.

The only piece of information I could find was that POKE 23659,0 would stop people breaking into programs. "Great" I thought and rushed off to try it . . . . it didn't work. Why it didn't work will become clearer later.

On page 173 of the Spectrum manual you will find a complete list of the system variables (these are used by the system to update various pieces of information). Because these pieces of information need to be updated and changed, the system variables are held in RAM and not in ROM, therefore the programmer can also change them and this is where the system variables are of use to us.

Address 23659 DF SZ controls and keeps track of how many lines there are in the bottom part of the screen. If we POKE 23659,0 (telling the computer that there are no lines in the bottom part of the screen) we can stop anyone from breaking into a program. Why? Because when anyone presses the BREAK key and stops the program the computer tries to print up a ' L BREAK into program' message at the bottom part of the screen. However, because we have told the computer that there are no lines in the bottom part of the screen, it cannot print its message and a system crash occurs thus wiping the program from memory. You can see what happens if you type out the short program in listing 1.

There is however a slight catch . . . for this method to work an auto-run is required (you can make any BASIC program auto-run by SAVE-ing it in the form SAVE "PROG-NAME" LINE (first line number). Most budding pirates know that MERGE-ing a program will prevent an auto-run. Therefore we need a way of stopping or preventing the MERGE-ing routine. When a program is MERGE-ed the computer automatically places the line(s) with a number greater than 9999 (purists will point out that you cannot poke any part of memory with a number greater than 255 — to them I say go and look at chapter 24 of the Spectrum manual), we can cause a crash if the program does not auto-run after being LOAD-ed. It does not matter if you do not fully understand this . . . if you want to find out more, take a look at page 166 of the Spectrum manual which shows how a line in a BASIC program is stored. Anyway, the upshot of this is that the program cannot be broken into 'manually'. Listing 2 shows what to do.

Next comes the problem of tape-copying programs. There is however quite a simple solution to this problem . . . since the tape-copying program has to take up some part of memory, so if we can fill up ALL of the memory, we will at some stage overwrite the tape-copying program and prevent it from copying all of the program. Listing 3 shows how to do this. Some tape-copying programs reside in the printer buffer (you do not need to know what this is, but it is basically a part of RAM that is reserved for use by the printer). Listing 4 shows how to deal with such tape-copiers.

The last problem we have to deal with is that of tape-to-tape copying. Since the MoD has banned JCL DATA's tape-to-tape copying prevention device, there seems to be no way of preventing the program being copied. The way to get round this is to have a sheet of numbers (preferably in colour, or a series of colours) that must be typed in at the start of the program like at the beginning of JET SET WILLY. (Incidentally this method of protection is copyright by Software Projects.) If you are serious about protecting your programs then I'm sure you can come up with your own system.

LISTING 1

```
10 POKE 23659,0
20 PRINT AT 0,0; "TRY AND STOP THIS": BORDER RND*7: GOTO 20
```

LISTING 2

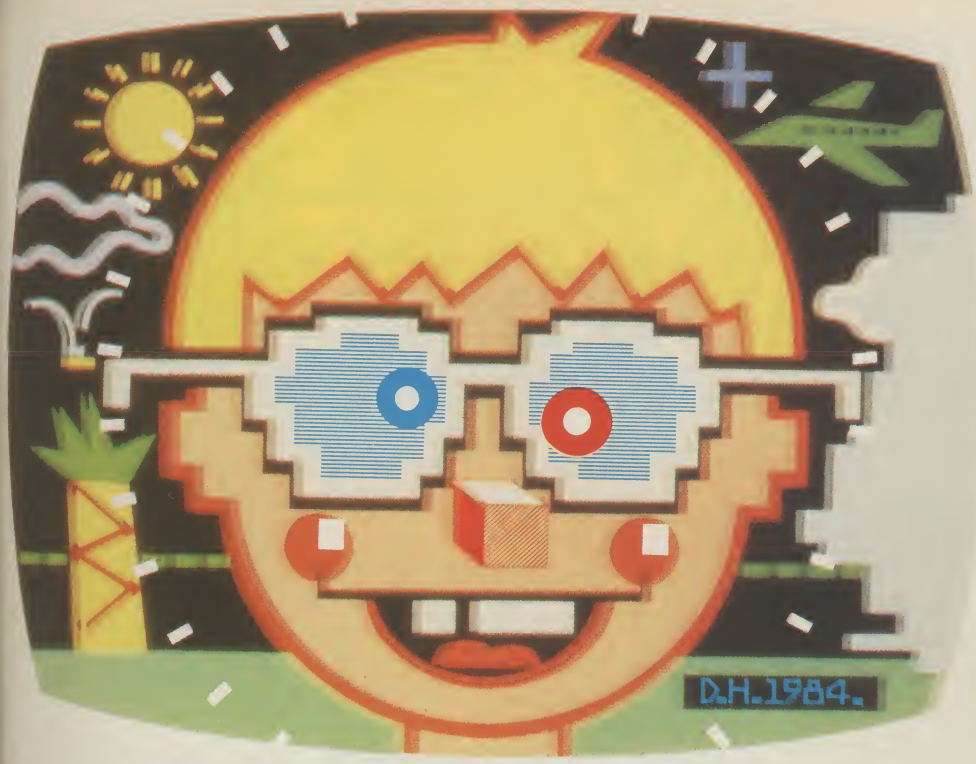
```
1 POKE 23659,0: POKE 23801,0
2 REM The program must then continue at line 2
3 REM If you CLS or INPUT or do anything that involves the bottom part of the screen, you must first temporarily reset the value of 23659 . . . eg POKE 23659, 2CLS: POKE 23659,0
4 REM When SAVE-ing your program, SAVE it in the following way . . . POKE 23801,255: SAVE "prog-name" LINE (first line number).
```

LISTING 3

```
1 REM Fill up any spare line numbers like this — 5000 REM
xxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxx (etc.)
```

LISTING 4

```
2 IF PEEK 23297<>0 THEN NEW: REM this should be in a loader program that loads in the main program
3 LOAD "": REM if basic or LOAD "" CODE if machine code.
```



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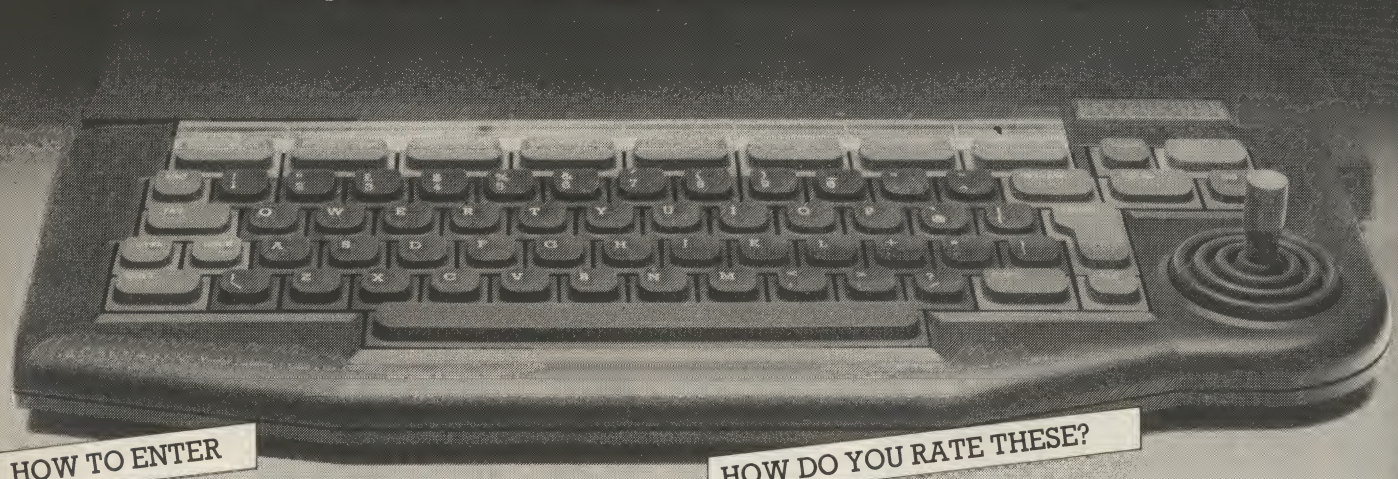

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.....

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The competition is open to all readers in Great Britain, Northern Ireland, Eire, the Channel Islands and Isle of Man except employees (and their families) of IPC Magazines Ltd, the printers of BIG K or of Enterprise Computers.

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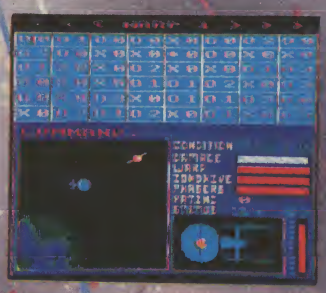

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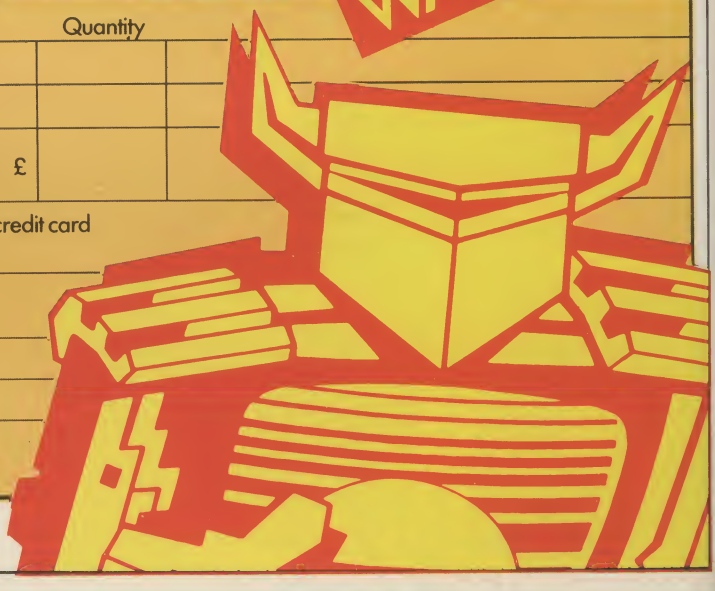


Peter and Trevor are not archetypal Hampstead Men — but they can spot one at the drop of a Gucci bag. NICKY XIKLUNA meets the pair who have brought social climbing to the home micro . . .

Two Go MAD In Hampstead

IF THE Sloane Rangers Handbook managed to curl the stiff upper lip into a self-effacing smile — in *Hampstead* the message is clear — social climbers come out!

Hampstead is the software equivalent of the lush and clever coffee table book. It belongs in the genre of thinking man's fantasy — so far only occupied by two other real-life adventure games — *Denis Through The Looking Glass* and *The Cricklewood Incident*. Its designers think of themselves as market leaders in a new class of quasi-intellectual software. The game is a text-only adventure, and the quest is to make it to middle class Nirvana — Hampstead.

For those in far flung corners of the world — like Esher — who do not know, Hampstead does in fact exist. It lies on an enormous plateau (entirely the product of its occupants' imaginations) somewhere in North-West London. It is a collection of olde worlde buildings grouped next to a heath. It calls itself a 'village', despite a constant stream of heavy traffic (mostly Rolls Royces) that oozes down its centre. The thing to do in Hampstead is to stroll from cocktail to cappuccino, and once you've mastered the correct beautific smile, you can try casting it at the arty inhabitants, or fellow social climbers.

Once booted into the game, you'll find yourself ensconsed in a sleazy North London flat. 'Inv' shows 3-2-1 on the TV and a UB40. Exploration reveals a bedroom with such commercial prospects as a fungus farm and last night's biriani luxuriating in the wash basin. It's enough to kick the most easy-going slob onto the social mobility trail. From these humble beginnings you must go out and up. It's a highly literate game, and your way is fraught with as many wise-cracks as it is with pratfalls and red herrings.

Authors Trevor Lever and Peter Jones stress that it's not enough to cash your giro and head to Hampstead. You must rather ATTAIN Hampstead. Questioning revealed that neither author possessed a Hampstead address. But Peter's pink tie and Trevor's Mondrain-style, brightly coloured sweater prompted me to ask if they were on their way.

"Oh definitely. We want money, fame and a certain artiness. *Hampstead* the game will help. Of course, social climbing is not the most important thing in life — but it is the most satisfying if done properly."

How do you go about social climbing?

"In order to attain Hampstead in life as in the game you must think like Hampstead Man. Consider the objects of behaviour you'd need to be accepted in Hampstead. Here's a tip. What you leave behind is often as important as what you take with you. As a social climber — you run the risk of being exposed as a fraud. But exposure is not the only cause of death in *Hampstead*. You also risk terminal writer's cramp, being eaten by a venus fly-trap, or choking on muesli."

The best game strategy is to establish yourself before trying to make it to Hampstead. Try your luck in the industrial maze or take a train to another location. Approach Hampstead with caution. Gather your wealth, status and power, then hit Hampstead like a bullet. And no one will know of your roots.

The Peter/Trevor partnership goes back a long way. It even survived being heckled off stage in their Northern comedy double-act debut — 'Liptrop and Pode'. Trevor describes himself as the 'solid computer man' of the duo, whilst Peter is the 'aesthete with his head in the clouds'. Both are PR men in the computer and video industries respectively. Neither are programmers and *Hampstead* was written on SMART — a kind of managemental *Quill*, and improved by MH.

"Neither of us have any desire to program. The industry needs new ideas more than anything at present. We've got them — and there are plenty of people around to put them into practice."

Does this mean they don't think much of current adventure-ware? Peter hands me a card. "I see nothing special," it reads. The first of many that the duo had prepared for their interview. (I can only assume that Peter, himself a former journalist, has his own reasons for mistrusting the press.)

"It really is time for something new. We aim to create a series of real-life adventures without recourse to magic, spaceships or hand-to-hand combat. All that dragonslaying and treasure hunting can't go on forever."

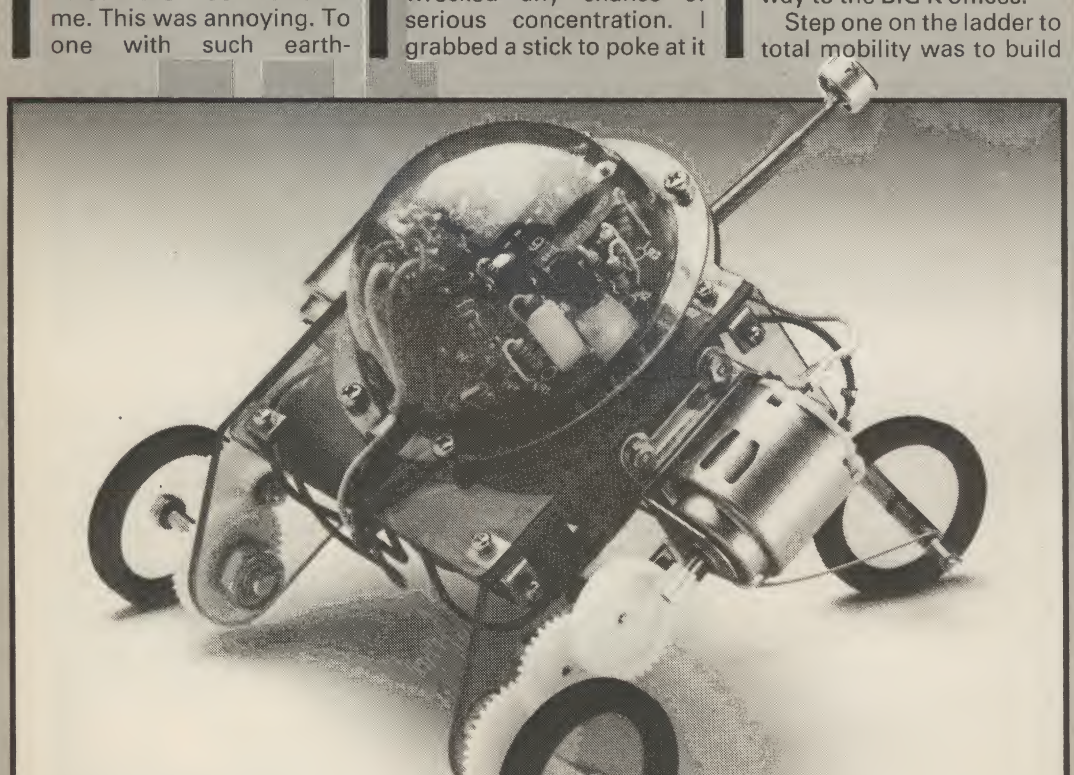
ROB...ON THE

Kim Aldis forsakes the fascinating world of wall-gazing to check out things that go clunk, whirr, beep in the night — and day. The Movits, D-I-Y robots with a difference.

SO THERE I was, sitting in my room watching a blue ink stain on the wall, juggling the odds on how long it would take to slide down to the floor. Life gets exciting like that, especially in sunny Balham and today looked as though it was going to be as exciting as any. Suddenly, a small whirring noise grabbed my attention. I looked down and saw a small bubble-like object making its way across the floor towards me. This was annoying. To one with such earth-shattering ideas on his mind, an electric rat can be most distracting. I slid one toe under the front of it and casually flicked it against the wall. It bounced, once against the ink stain, then again off the floor and carried on about its business, finally finding solitude under the desk. Interesting. I returned my attention to the blot on the wall, but it was no good, the whirring dervish under the desk had wrecked any chance of serious concentration. I grabbed a stick to poke at it — after all it might bite — and it trundled out into view, apparently none the worse for its flying lesson.

What was it? It was a Movit, one of the five build-it-yourself beasties from Prism, and I wanted one. It could be the answer to the penicillin plant in the kitchen which had once been known as the washing up. I picked up the phone and before long five small bundles were winging their way to the BIG K offices.

Step one on the ladder to total mobility was to build them. I must admit to a certain amount of trepidation at this point. Previous experience of building this type of thing has been fraught with pitfalls usually ending with a pile of bits on one side and a hideous monster on the other. Far from it, the diagrams and instructions that came with all of the Movits were exceptionally clear and all the parts, although rather small and fiddly, were in clearly labelled packets. All that was needed was to take the right bit out of the right packet and put it in the right place as indicated on the diagram. The whole bunch took about a day to assemble and they all worked first time round.



There are five of them in all. The cheapest in the range at £9.99 is *Monkey* and it's probably the most amusing. The two hooked arms at the top allow it to be hung from a length of cord like a pair of Y-fronts on a washing line. Any sudden noise — a handclap works quite well — sends it swinging arm over arm along the cord. It keeps going for five seconds or so before stopping — and then sits there waiting for another noise.

Next came *Line Tracer II*. This is, wait for it, a line tracer, meaning it follows any dark line on a light floor or vice versa. It finds its way round using an optical sensor on its belly. The only problem here is finding a suitably flat floor. My kitchen floor boasts tasteful black and white tiles which gave it problems. What it does is to run on one of its two motors until it picks up a colour change on the floor. This causes the current motor to cut out

OTS
MOVE

Mmmm! . . . these Roboburgers are a real tastee bite!

and the other to cut in making it change direction. If the corners are tighter than its turning circle (about 20 cms) it wanders off and does its own thing against the nearest wall. The kitchen floor nearly gave it a nervous breakdown. The sensor underneath is very sensitive, even picking up pencil marks on paper and it responds very quickly even on lines a good deal thinner than those recommended for use.

Piper Mouse is good for a laugh. It's a three-wheeled affair controlled by a whistle which takes it through a cycle of moves. The first blow of the whistle sets it scuttling off to the left then subsequent blows make it stop, go right, stop, go forward and then finally stop again, in that order. You have to be quite close (within about 3 metres) to make it respond and sometimes — if the microphone is facing the other way — you have to get even closer. Maybe someone will dream up a hearing aid for it. Aside from that the whistle is enough to drive a saint bananas. After about half an hour a pack of rather unfriendly stray dogs had gathered outside the kitchen window, casually dismembering anyone who happened past.

My favourite was the *Circular*. All the rest of the Movits use some real flash methods to control them but the Circular goes back to good old-fashioned radio control. Its appeal lies in its method of movement. As the name suggests, it's circular in shape and the wheels form two rims around the outside. The rims go round when it moves but the main bulk of the thing remains stationary giving the illusion that it's gliding along the floor. It's very sensitive about how rough the floor is. If it hits a bump it makes a kind of grinding noise and seizes up completely, at the same time it's very manoeuvrable, turning very fast and almost on a sixpence. Very nice.

Last, and most expensive, in the range is the *Memocon Crawler*, a sort of chopped-down turtle. It's programmed in steps by means of a small plug-in keyboard. Control is given over left, right and forward with the added bonus of a bleeper and a LED which can be activated at will. After programming, the keyboard is detached, a small button touched and it sets off about its business until you either switch it off or tread on it! It's a bit frustrating to find that it's not that accurate. Sending it in a straight line for more than a metre or so allows it to veer off course quite substantially. On the other hand it's not expensive when compared to some of the more sophisticatd turtles available and making it more accurate would mean either more accurate motors or some kind of positional feedback which in turn would make it more expensive. For my money I would rather see the price kept down.

The Movits are an interesting idea. Unfortunately recently the emphasis has been on quality and accuracy rather than low cost and it's nice to see something more likely to appeal to those amongst us who aren't millionaires. I found them most absorbing at the building stage, the main drawback being that once built there's not much variety in what they can do. At the same time, because of the way they're made it would be quite possible to kind of jumble them all together into some sort of Frankenstein's monster. For the moment, though, it looks like my washing up stays furry. Unless, of course, someone wants to come round and do it for me.

PRICES:	
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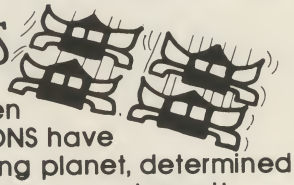

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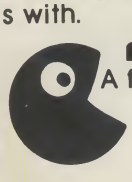
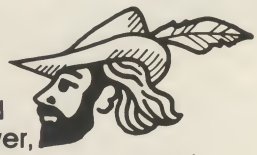


A fantastic version of this popular arcade game.

Robin to the Rescue



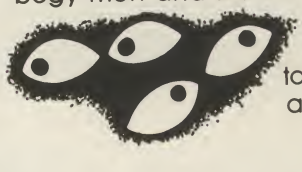
In days of old when knights were bold and the sheriff was in power, to play this game guide Robin Hood, to Marian locked up in the tower.

New Alley Cat

Guide Thomas the cat along the 13 walls of SOLAR street to his lady friend, who awaits him on the end wall, but beware of the flying boots, bottles and mops, which are just a few of the hazards you will encounter.

New Bogy Men

Guide Boris up the ladders, to collect a coin from the top of the screen, but beware! the bogy men are out to get you. He must return to the bottom of the screen, avoiding the bogy men and insert the coin in the electric meter. The lights will come on enabling you to see the pitch fork, and after retrieving it, kill the bogy men.



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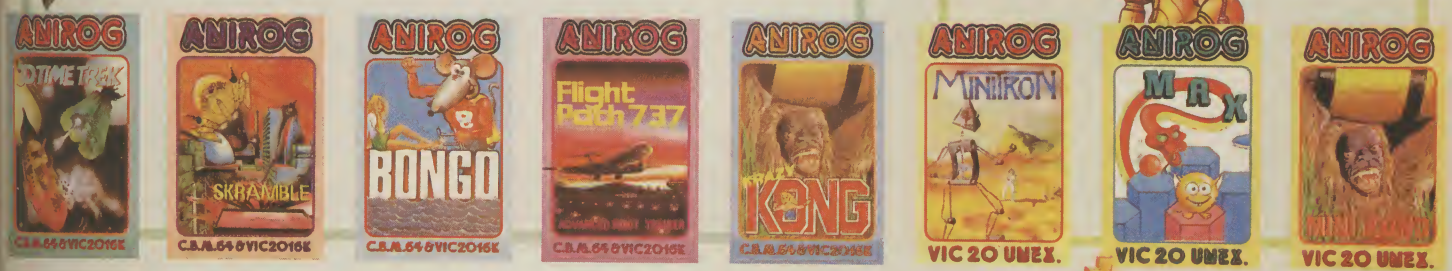

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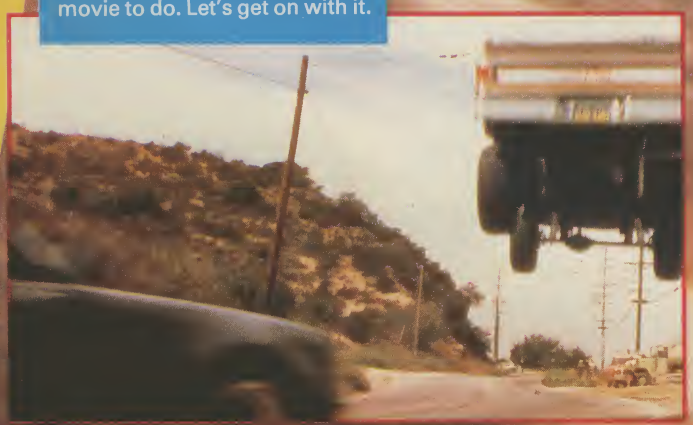
READY WHEN MR SEAVERS

SCENE 1 Okay, sweeties, now I want absolute quiet on the set. Where's that Seavers stunt guy? Ah, there he is. Colt, baby, this is a piece of cake. All you've got to do is jump onto this train from the top of the brick tunnel, then run along the carriage roofs and jump down onto the track at the end. What did I tell you, big guy, it's easy peasy. Okay, this is take one and . . . action! That's it, Colt, onto the first carriage, the train's moving, getting faster. Move, baby, there's the tunnel coming up and . . . oh, oh. Pick him up, boys, we'll go again. Take two and . . . action! Okay, Colt, you're moving well this time. Jump the carriages, leap the gaps, don't fall between them . . . er, oops. Colt, babe, you know I love you but there's only three takes allowed for this scene and we've got a whole movie to do. Let's get on with it.



SCENE 2 Colt, honey, I know you're worried. Standing on top of a burning skyscraper is not my idea of fun either but don't worry, help is on the way. Okay, we're going for a take and . . . action! Watch out for the helicopter, Colt. Here it comes. Get ready to leap up and catch hold of the skids, the chopper will carry you to safety on the next rooftop. Now, get ready and jum . . . er, right. Yeah, Harry, you'd better circle round while Colt picks himself up. Take two and . . . action! Beautiful, Colt, you've grabbed the skids, you're dangling well, now wait till you're over the the next building and let go. Not yet — you're too high! Right, Harry, we'll wait till the medico patches him up and go again. Take three, Colt, the last one or the game's over for you.

YOU ARE RS

BIG K brings you an exclusive location report from the set of Elite's new computer game production of TV's THE FALL GUY . . .

SCENE 3

What's all that snow up there? Why, it's an avalanche effect, Colt, my little icicle. What would a mountain scene be without an avalanche? All you have to do once it starts is to get to safety without getting swept away. You must remember doing something like this on that 'Bionic Guy' show you worked on. Right, quiet on the set and . . . action! That's it, Colt, move quickly. Cue the avalanche! Hurry, Colt, it's coming up fast and . . . oh, well. Send in the St. Bernard, we'll find Colt by morning.

Colt, sweetness, you must know by now that we've only got three takes on each of these scenes, you've got to get it right first time. There's still the broken bridge over the flooded river, wing walking between two planes and the raging inferno to escape, to name but a few. You may think it's only a game but some of us find it deadly serious.

Screen shots from pre-production Spectrum version of The Fall Guy. Below, screen 1, scene 1 — the train stunt.

A CRITIC REPORTS

I viewed this new production of *The Fall Guy* with interest. Obviously a spin-off from such a popular television series would attract a lot of attention from fans of the stunt man and modern-day bounty hunter. But would they appreciate the depiction of their hero as a computer game character?

The player is presented with a series of situations worthy of the Big Guy himself, which have to be worked through. However, the plotline becomes somewhat pedantic after a while as stunt follows stunt. The bounty hunting activities of Colt Seavers are only exploited in the latter stages of the dozen screens available.

The graphics present the player with constantly changing scenarios and are of a high quality. Indeed the whole game stands up well to the many other TV adaptations that are proliferating across computer screens at present.

I think *The Fall Guy* has definite box office potential but I reserve my final judgement for the moment. As of writing the production has obviously run over schedule because the producers were only able to show me a rough cut. I look forward to seeing the completed version.

THE Officially Licensed Computer Game Version of the TWENTIETH CENTURY FOX Television series featuring Lee Majors as THE FALL GUY. An ELITE Production for the 48K Spectrum (£6.95) and Commodore 64 (£7.95, £9.95 disc).

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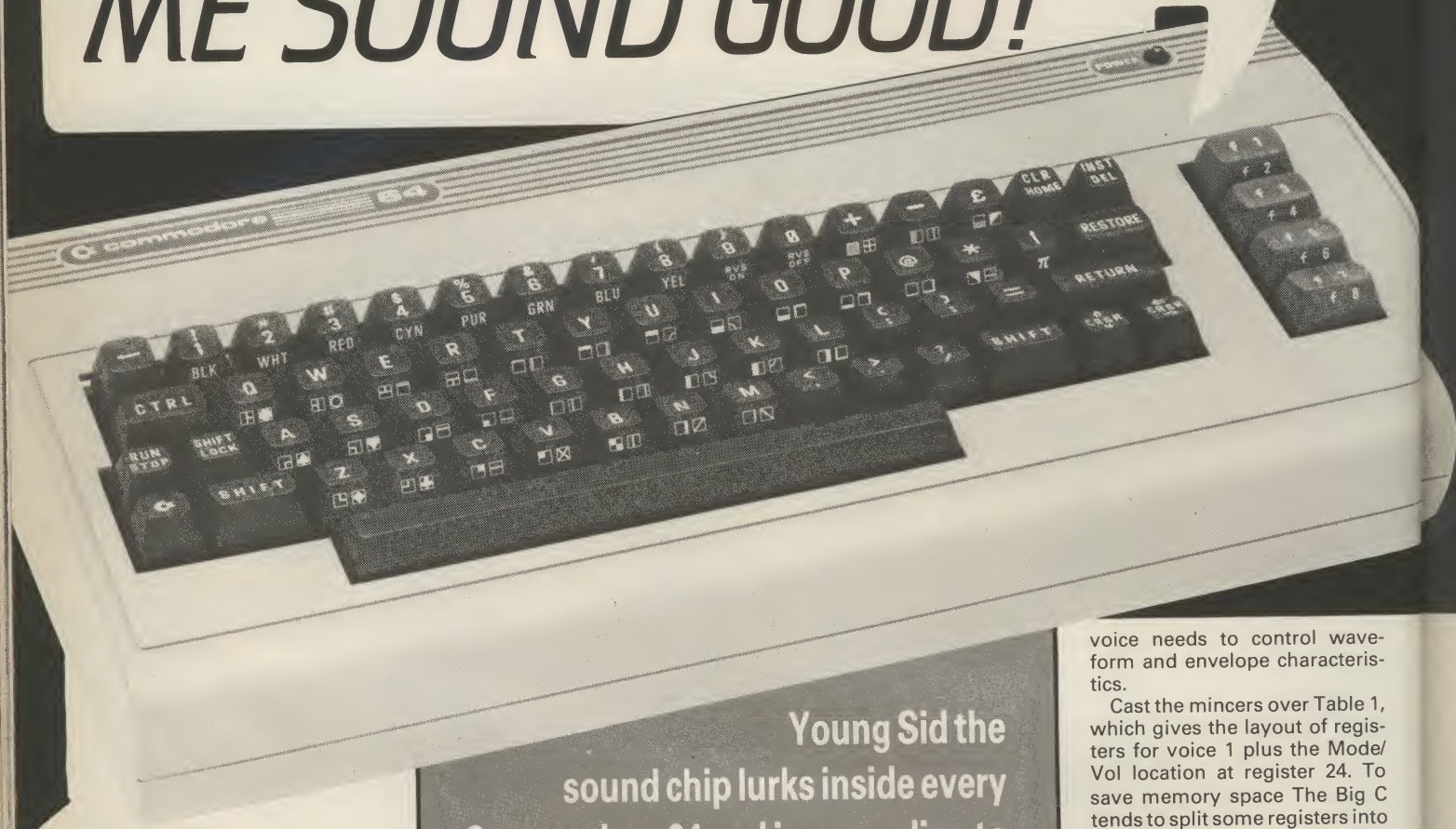


Young Sid the sound chip lurks inside every Commodore 64 and is, according to KIM ALDIS, '. . . more powerful than that of any other home computer.' But how do you get great sound out of it? Read on . . .

SOUND ON the Commodore is not hard. Who said that? Confine him to the nether regions of the North Sea with his feet encased in concrete and a knot in his neck. Nothing you do on the Commodore is particularly easy but you can make it easier. If you buckle down and approach the problem in an organised manner the machine is capable of some extraordinary things. Take sound for instance. Young Sid the sound chip is probably more powerful and versatile than that of any other home computer. Three voices, a choice of four waveforms, three types of filtering, ring modulation and envelope control all combine to give control over the type of sound you can make. On rare occasions it's even been known for Sidney to speak.

The great secret to easy use of the SID chip is an understanding of the seemingly vast number of control registers and a reasonable knowledge of how sound works.

Let's have a look at the nature of sound first. The tonal quality of a noise is governed largely by its waveform. A detailed explanation would fill a fair-sized book but for now it's enough to accept that a waveform is a graphical plot of amplitude (how loud) against time (diag. 1). The Commodore can generate four different waveforms: sine, sawtooth, pulse and noise. A quick butchers at diag. 2 gives an idea of how they get their names and the sort of noise they make. The noise waveform is just a mishmash of random pulses and sounds like an elephant doing what elephants do best.

Now the sound envelope. This is what governs how a sound starts, what it does when it's sounding and how it dies away. The envelope is split into four parts (diag. 3). ATTACK, the rate at which the sound builds to its peak volume; DECAY, the rate it falls to the SUSTAIN level which is the main part of the sound. Finally RELEASE which is how long the sound takes to die away.

So now you know all about sound. Question is how to teach the Commodore about it? The chip responsible for the various burps, belches or whatever that the 64 can make is SID (Sound Interface Device on formal occasions). SID consists of a rather daunting array of 29 registers starting at location 54272, 27 dedicated to making sound, the other two used for analogue joysticks.

O.K., you've got 27 locations to muck about with, what do you do. First Law of Commodore Computing:

PANIC

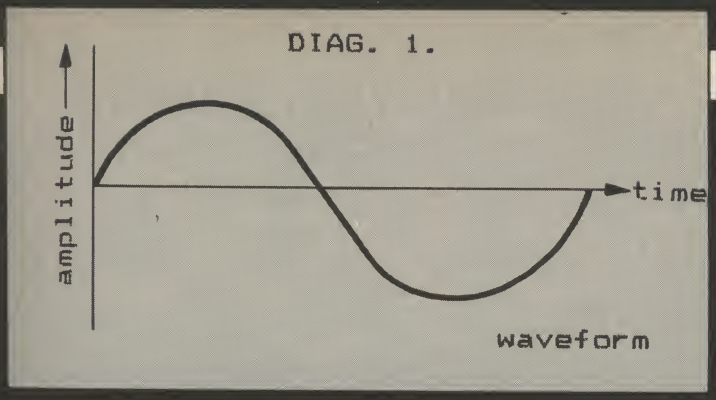
Feel better? Now look at the problem logically. To start off we'll only look at simple sounds using one voice. For this you only need eight registers: Mode/Vol (don't worry about Mode, we'll get to that at a later date) and the seven registers each voice needs to control waveform and envelope characteristics.

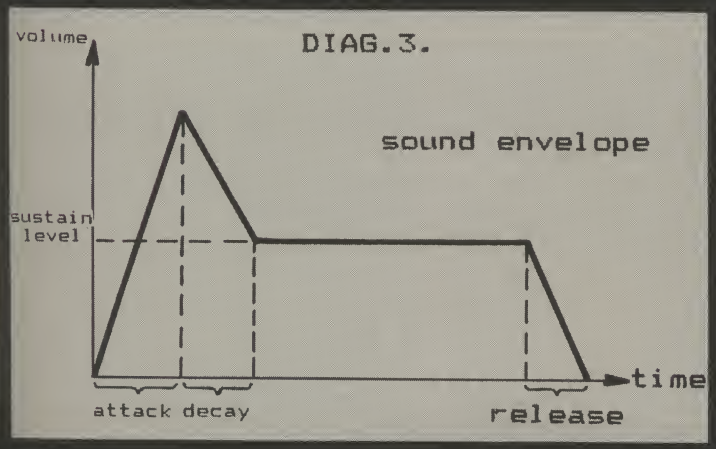
Cast the mincers over Table 1, which gives the layout of registers for voice 1 plus the Mode/Vol location at register 24. To save memory space The Big C tends to split some registers into two and use them as a sort of dual purpose register. Mode/Vol (register 24) is one of these, check the lower four bits control volume for all three voices which means a total of 16 settings, 0 to 15. The four high bits are for filtering which is for doublebrains so forget them for now.

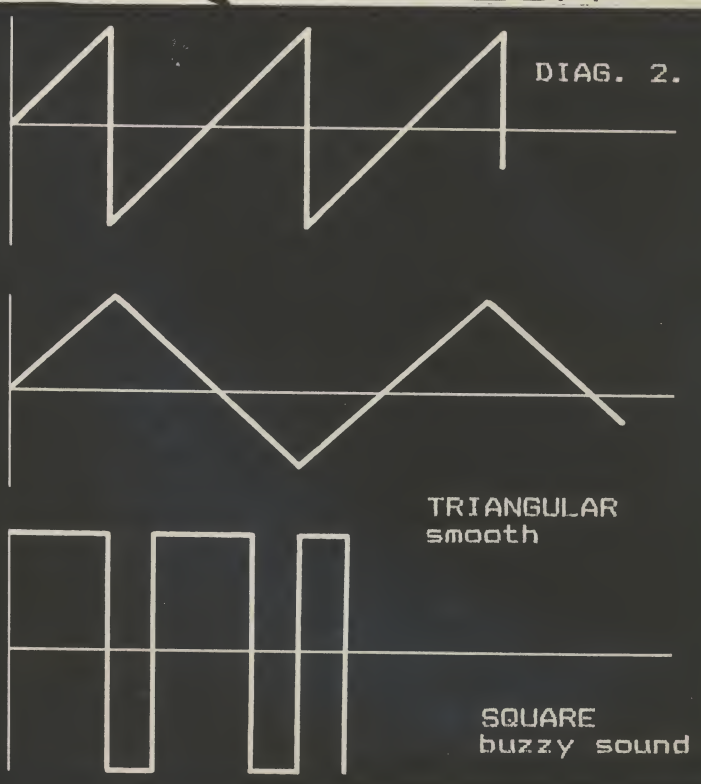
Working through the rest of the registers for voice 1, frequency is just a fancy word for how high or low the note sounds. This uses two registers: frequency low and frequency high. The best way of looking at these is to think of the two as a double-sized byte (a 'word') as in diag. 4. This arrangement means you can whop a bigger number into the frequency of the note and so get a wider range of sound.

Pulse width high and low operate on the same principle but control the pulse width for a square wave. We'll come back to that later.

The next register gets interesting. Look at diag. 5. The top four bits of the Control register dictate the waveform or type of sound you get. Don't worry about bits 1 to 3, they get used for things like ring modulation and synchronising with other voices. Bit 0, however, does concern us. This is the GATE bit which switches the envelope gener-







ator in and out. When this bit is set the envelope generator is 'gated' or triggered and the ATTACK/DECAY/SUSTAIN cycle of the envelope is started. Clearing the bit initiates the RELEASE cycle and the sound starts to die away. Easy, innit? Set the bit to start the sound, clear the bit to stop it. But don't forget to set the waveform first.

Before you can start and stop an envelope, you need an envelope to start and stop which brings us to the last two registers in Table 1, ATTACK/DECAY and SUSTAIN/RELEASE. You guessed it, they contain the envelope parameters. Again, the Commodore does a bit of space saving by cramming two parameters to a byte as in diag. 6.

Once you've got that lot clear in your mind the rest is fairly straightforward. The basic procedure for making a sound runs roughly as follows:

1. POKE the frequency (regs. 1 and 2)
2. Then the waveform (reg. 4)
3. Now set up the envelope parameters in regs. 5 and 6
4. POKE a volume into reg. 24
5. Set the GATE bit in reg. 4
6. Go into a FOR . . . NEXT loop for as long as you want the sound to last and then —
7. Clear the GATE bit.

That's what you do and Prog. 1 is how you do it. Changing the values in lines 30 to 60 will give you different noises.

Lastly, we come back to the square wave pulse. You may well have tried to run Prog. 1 with a square wave and got nothing from it. That's because a pulse width has to be put into registers 2 and 3. The pulse width is the width of a square wave as shown in diag. 7. So go ahead and put one in. If you've understood most of what's gone on so far you should have no problem in adapting prog. 1.

In case you're wondering what the other 21 registers have got to do with all this, bear in mind that there are more voices so registers 0 to 6 are duplicated over registers 7 to 20. The rest are for filtering of sound and reading the analogue port. I'll cover these later in the series.

As an added bonus (value for money is the name of the game in this mag), prog. 2 is a short utility for making sounds. All the sound parameters are displayed as you change them and instructions are displayed on the screen, so go ahead and keep the neighbours awake for a while. They've got to get up in the morning anyway, so who cares?

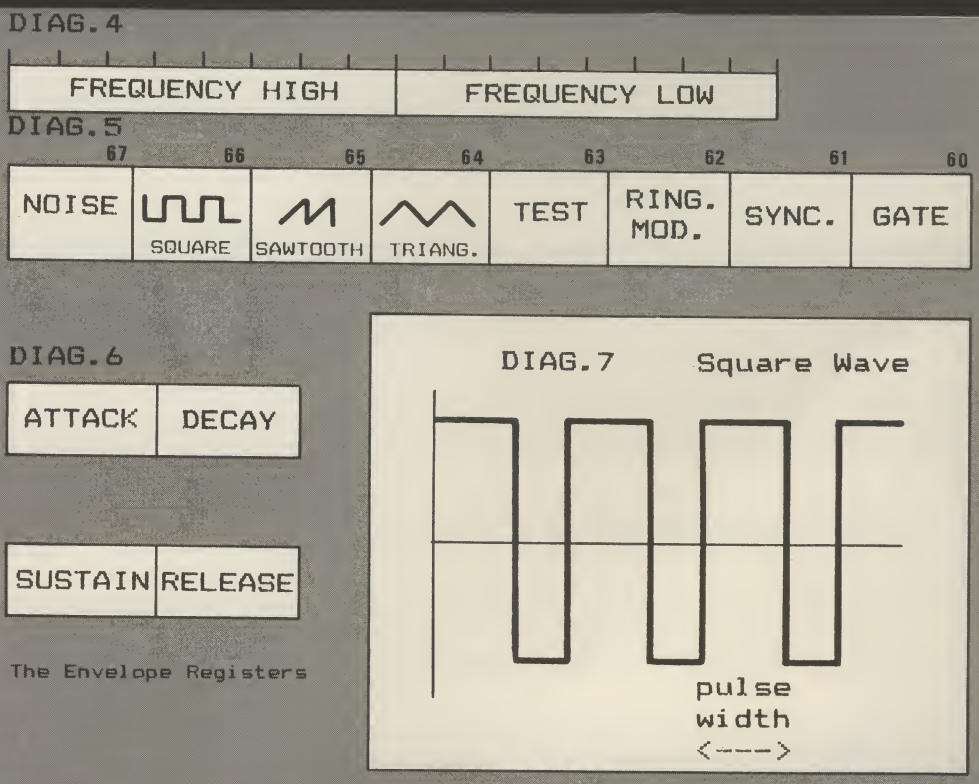


Table 1

Register	Register name
0	Frequency Low
1	Frequency High
2	Pulse Width Low
3	Pulse Width High
4	Control Register
5	Attack/Decay
6	Sustain/Release
24	Mode/Vol

DUCKWORTH HOME COMPUTING

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40 BEST MACHINE CODE ROUTINES FOR THE 64
by Mark Greenshields

Provides 40 excellent machine code routines which can be incorporated into both Basic and machine code programs. The routines include useful utilities, such as the following. Print at: no more need for those weird cursor symbols! Move: move an area of memory to another area. Pause: stop a listing at any time by pressing the shift key. Function keys: program the function keys. Copy: copy any part or all of the character ROM into RAM. Doke: POKE a 16 bit number into memory. Deek: PEEK the 16 bit number. List alter: list programs in any width to screen or printer. Old: recover a NEWed program. Invert: invert all or part of the high res screen. Organ: play music while running another program. Scroll message: scroll a message across the screen while running another program. Flash characters: put flashing text on the screen. Split screen: divide the screen into text and high res. Sound: make sounds easily without pokes. Envelope: allow complex sounds to be created without pokes. A listing of Extramon is also included. Mark Greenshields is the author of *Mastering the Commodore 64* and *Mastering Machine Code on the 64*, and a regular contributor to *Your 64*. £5.95

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CONTINUED FROM 69


```
5 REM%%%%%%%%%%%%%%%%%%%%%%%%
10 REM %%%% SOUNDMAKER %%%%%
20 REM%%%%%%%%%%%%%%%%%%%%%%%%
30 GOSUB 500: REM SET UP VARIABLES
40 KE=PEEK(197)
50 IF KE=60 THEN GOSUB 600
60 GOSUB 800
70 GOTO40
80 REM
90 REM%%%%%%%%% SET VARIABLES %%%%%%%%%%
500 SID=54272
510 FOR I=0 TO 29:POKE SID+I,0:NEXT
520 AT=8:DC=10:SU=15:RL=10
530 FL=100:FH=10:PL=100:PH=0
540 WV=16
550 NL=500:VL=15
555 SN=1
556 SN$(0)="UP":SN$(1)="DOWN"
560 GOSUB 2000:REM SET SCREEN
570 RETURN
580 REM
590 REM %%%%%%% MAKE A SOUND %%%%%%%%%%
600 POKE SID+24,VL
605 POKE SID+24,VL
606 AD=A2+DC:SR=S2+RL
607 POKE SID+2,PL:POKE SID+3,PH
610 POKE SID,FL:POKE SID+1,FH
640 POKE SID+5,AD:POKE SID+6,SR
650 POKE SID+4,WV+1
660 FOR I=0 TO NL:NEXT
670 POKE SID+4,WV
680 RETURN
690 REM
700 REM%%%%%%% UPDATE VARIABLES %%%%%%%%
800 IF KE=4 THEN AT=(AT+1)*ABS(AT<>15)
810 IF KE=5 THEN DC=(DC+1)*ABS(DC<>15)
820 IF KE=6 THEN SU=(SU+1)*ABS(SU<>15)
830 IF KE=3 THEN RL=(RL+1)*ABS(RL<>15)
840 A2=((AT AND 1)+(AT AND 2)+(AT AND 4)
+(AT AND 8))*16:IF A2=0 THEN A2=16
850 S2=((SU AND 1)+(SU AND 2)+(SU AND 4)
+(SU AND 8))*16:IF S2=0 THEN S2=16
870 GOSUB 1500:REM PRINT OUT PARAMETERS
880 IF KE=9 THEN WV=(WV*2)*ABS(WV<>128)
890 IF WV=0 THEN WV=16
900 IF KE=41 THEN PL=PL+SN*10:IFPL>=255
THEN PL=0:PH=PH+SN
1000 IF PH>=16 THEN PH=16
1002 IF PL<0 THEN PL=255:PH=PH-1
1003 IF PH<=0 THEN PH=0
1010 IF KE=40 THEN SN=-SN
1020 IF KE=21 THEN FL=FL+SN*10
1030 IF FL>=255 THEN FL=0:FH=FH+SN
1031 IF FL<0 THEN FL=255:FH=FH-1
1040 IF FH>=255 THEN FH=255
1041 IF FH<=0 THEN FH=0
1050 RETURN
1060 REM
1070 REM%%%%%% PRINT PARAMETERS %%%%%%%%
1500 PRINT"S".SN$(ABS(SN=-1))
1505 PRINT TAB(10),AT,CHR$(157),"  ",TAB
(30),DC;CHR$(157);"  "
1510 PRINT:PRINT TAB(10),SU,CHR$(157),"
";TAB(30),RL;CHR$(157),"  "
1520 PRINT:PRINT TAB(10),FH,CHR$(157),"
";TAB(30),FL;CHR$(157),"  "
1530 PRINT:PRINT TAB(10),PH;CHR$(157),"
";TAB(30),PL;CHR$(157),"  "
1540 PRINT:PRINT TAB(10),WV;CHR$(157),"
"
1550 RETURN
1560 REM
1570 REM%%%%% INITIALISE SCREEN %%%%%%%%
2000 PRINT"S".REM CLR/HOME
2010 PRINT"F1-ATTACK          F3-DECAY"
2020 PRINT:PRINT"F5-SUSTAIN         F7-RE
LEASE"
2030 PRINT:PRINT"  F-HIGH              F-L
O"
2040 PRINT:PRINT"  P-HIGH              P-L
O"
2050 PRINT:PRINT"  WAVEFORM "
2060 PRINT:PRINT"cccccccccccccccccccccc
ccccccccccccccc"
2070 PRINT:PRINT" USE W TO ALTER WAVEFOR
M,":PRINT:PRINT" P TO ALTER PULSE"
2080 PRINT:PRINT" F TO ALTER FREQUENCY"
2090 PRINT:PRINT" FUNCTION KEYS TO ALTER
 ENVELOPE"
2100 PRINT:PRINT" SPACE TO PLAY A NOTE"
2110 PRINT:PRINT"+ TO INCREMENT OR DECRE
MENT"
2120 RETURN
```

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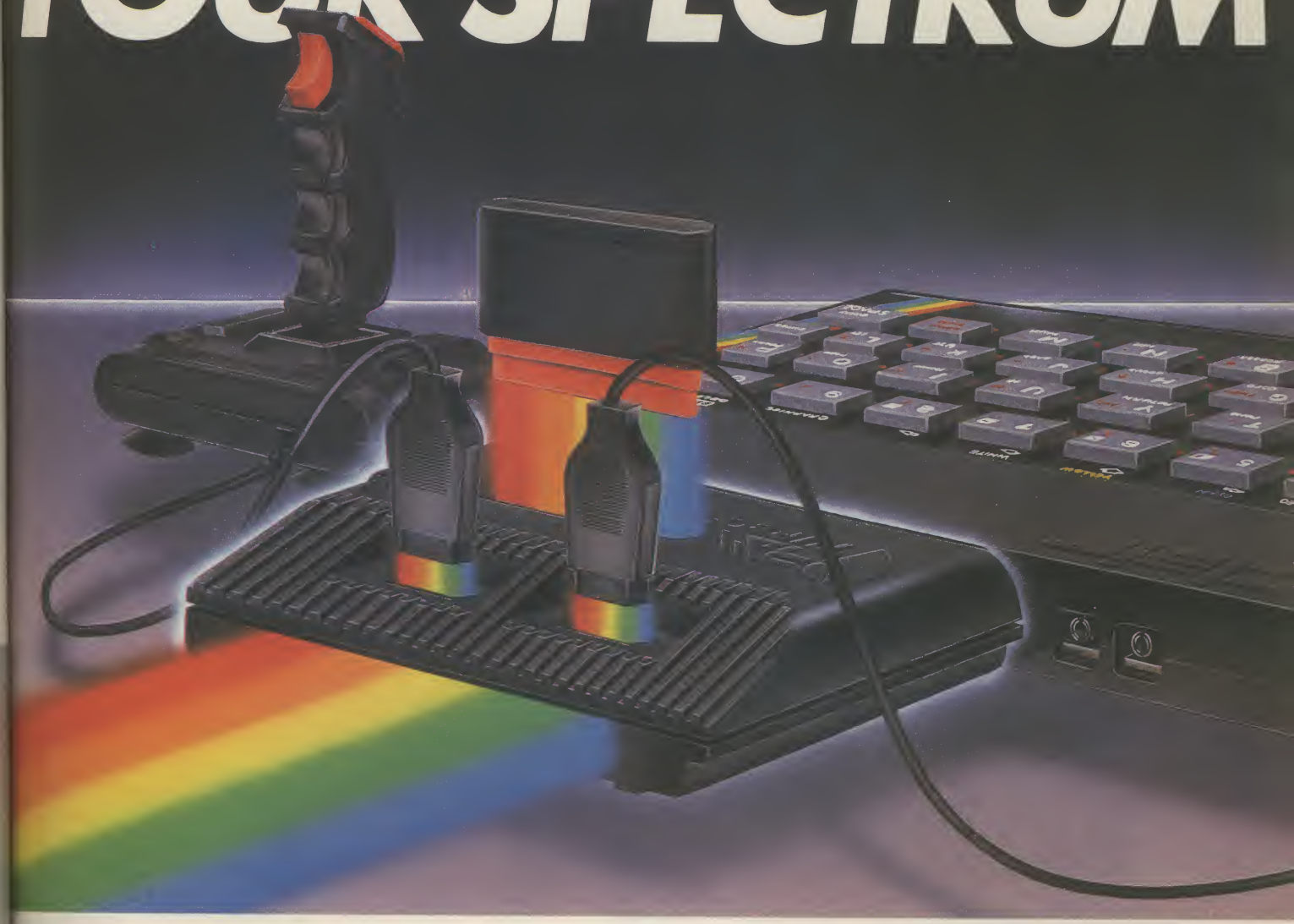

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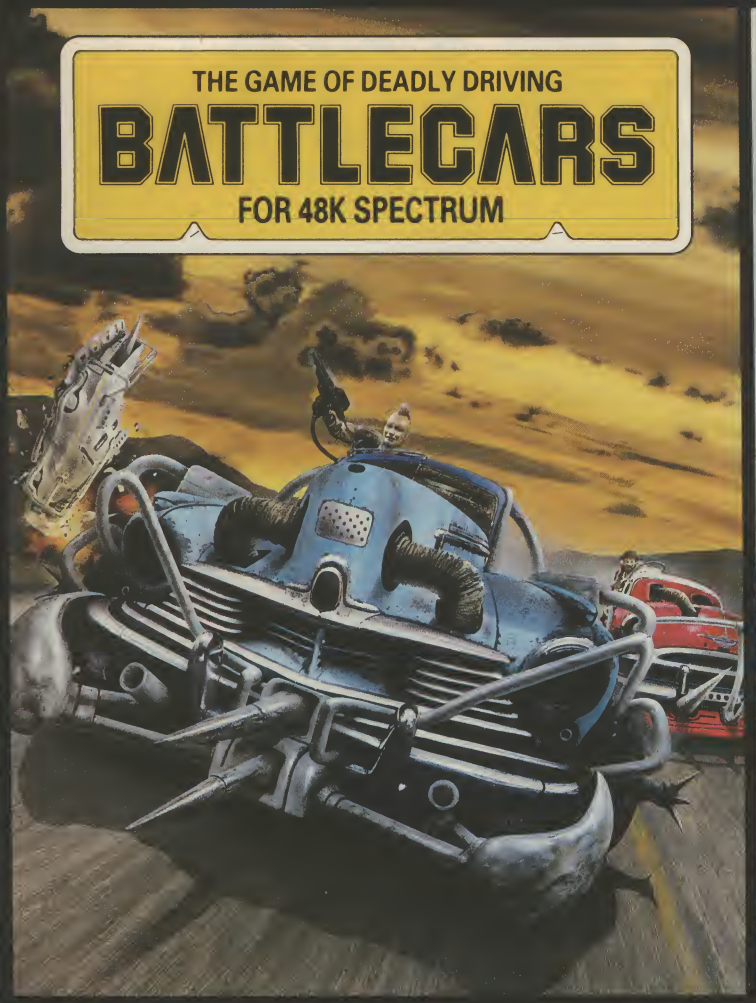

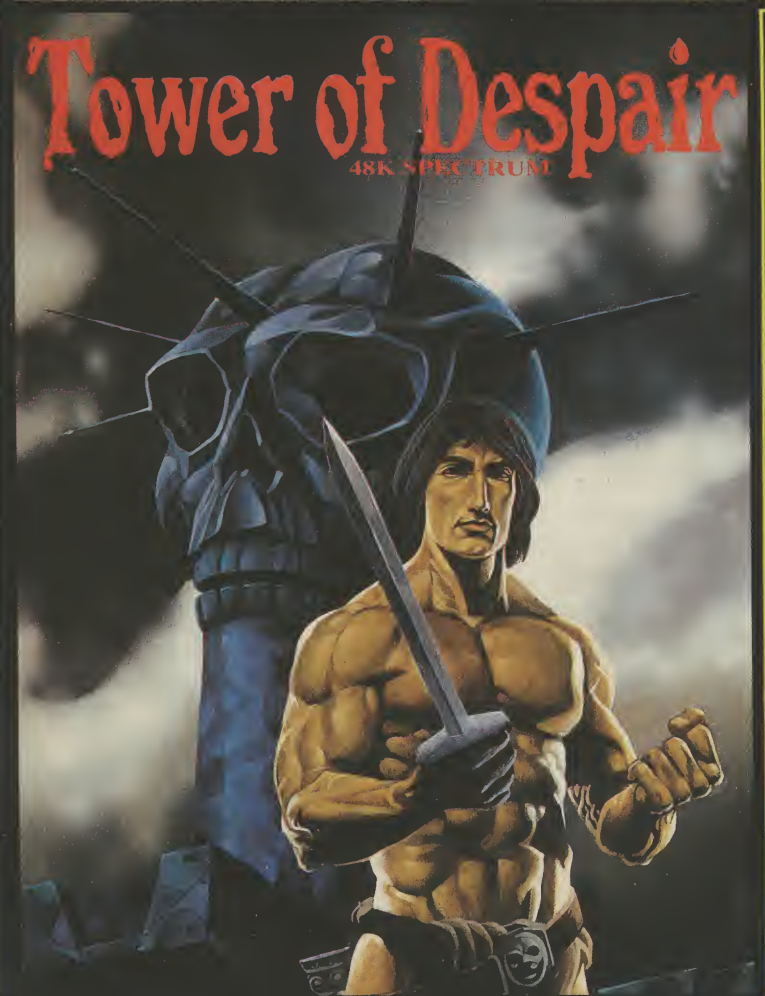

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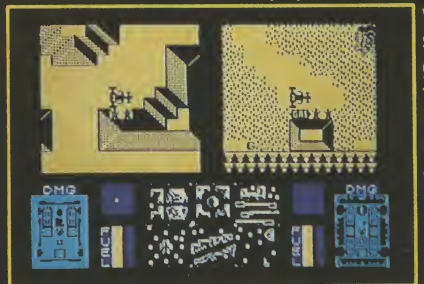

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FASTEST DRAW IN N.W.11

. . . Is KIM ALDIS, who's thrown out his paint-daubed smock, his palette (and his onions) and produced a snappy and versatile CAD (Computer Aided Design) package for BIG K Beeb owners.

You've heard of MAGRITTE? Neither has Aldis . . .

CAD STANDS for 'Computer Aided Design'. Put more simply it means drawing pictures with a computer and it's a fun thing to mess around with.

Looking around the racks of Rip-Off Software Inc. it doesn't take a great deal of savvy to suss that every CAD package available is 'powerful, easy to use and versatile'. They also cost over twenty crisp oncers and they're usually in BASIC. Which is one reason for the existence of *Graph-Pac.*

First of all don't be put off it by the voluminous instructions. For the most part the only keys needed are the red function keys so all you need to do is slip a strip (poetry, geddit?) of key names under the plastic bit and there should be no problem. Any other keys are fairly obvious; COPY saves or loads a screen from tape, Q (for quit) gets you out of the program, etc.

The program centres around a technique known as 'Rubber Banding'. An animated line stretches from a fixed point to a cursor whose position is controlled by a joystick. Once you're happy with the position of the line press the fire button and the line is 'fixed' in position, the new fixed point being moved to the cursor position. If you don't have a joystick then invest in one. Believe me it's worth it for speed and ease of use.

Looking at the function keys first, starting from the top and working down:

F9 is used to draw ellipses. The joystick is used to control a rectangle which defines the limits of the major and minor axes of an ellipse (which is a flash way of saying an ellipse fits in the box). Get the rectangle to the size of ellipse you want and press the fire button. The rectangle disappears and an ellipse takes its place. You can have the ellipse rotated left or right, using the '<' and '>' keys to rotate the box before it's fixed and the origin (at the centre) can be moved along the x and y axes using the cursor keys.

Rectangles are drawn using the f8 key. Exactly the same as the ellipse key but a rectangle is produced. It can be rotated and have its origin moved in the same way as the ellipse.

Function key 7 is used to position text on the screen. After pressing f7 just enter text which will appear at the cursor position. Move it around with the joystick and use the fire button to fix it. A useful point to remember is that CTRL H, I, J and K can be used to move back, forward, down and up respectively. This means you can have vertical or diagonal text. If you've defined characters using the character definer (more of that later) these are in the function keys in the order you defined them (f0 first character, f1 second etc.). Just press them, you'll see.

Logically displayed colours can be changed using f6. This uses the VDU19 command and might need some experimentation. The routine expects numbers which must be input using the function keys. A list of logical colours is shown on page 165 of the *User Guide.* I'm sure you don't need wet nursing through it; just follow the prompts as they appear.

Coordinates of the cursor, current rubber band length and angle from the horizontal can be displayed using f5. Useful for accurate positioning of lines.

Line colour (and fill colour, more later) is changed using f4. Again this expects a number from the function keys. Check page 165 of the BBC Bible for the numbers of the colours.

F3 gives you an eraser. Be careful with this if you're working on something important. What happens is the cursor is replaced by a small triangular shape. This systematically demolishes anything it passes over in much the same way as a pencil eraser. Once it goes you can't get it back. Press the fire button to get rid of it.

After you've mucked about with the rubber band for a while you'll probably realise it's a pain having each line connected to the previous key. Key f2 solves this by turning the line on and off. Once the line is off move the cursor to a new position and press the fire button. Turning the line on again will show that the new start position is the cursor position. (Sounds confusing? Try it, you'll soon get the hang of it). It's a good idea to have the cursor on while you're doing this so you know where you are. The cursor is toggled on and off by f1.

Function key 0 is fun. This is the fill routine. Position the cursor anywhere inside a shape and press f0. The shape fills with the current line colour. The routine only fills black areas and be careful that the area you fill is fully bounded by lines or blocks of colour. If not the fill will bleed over the screen boundaries and tie itself in knots. If this happens just wait a while, it gets fed up after ten minutes or so and stops but it's a real pain waiting.

That just about ties up the function keys, which leaves us with a few others dotted about the keyboard. Pressing ESCAPE clears the screen after checking that you really mean it. If you do, press 'Y' when it asks you; if not, any other key will do. The cursor keys are used for moving the origin of the rubber band and COPY takes you into load/save to preserve your precious masterpieces. Just follow the prompts. Pressing ESCAPE will abort.

Unfortunately there was no room left for a printer dump and anyway, different people have different printers. Pressing 'Q' lets you out of the program without destroying the screen image so you can run your own printer dump. Typing 'RUN' gets you back into Graph-Pac.

The 'TAB' key lets you define characters which can be put on the screen in text mode (f7). As mentioned earlier your characters are stored in the function keys in the order you define them. The procedure is simple enough, after pressing the 'TAB' key you will see a small area in the bottom right of the screen with a small cursor in it. Use the cursor keys to move the cursor around and the 'SPACE' key to make or unmake a mark (each character is made of an eight by eight matrix). When you are happy with your design press the 'TAB' key again.

Finally there is a textured fill, of sorts, which is rather fun to muck about with. It's toggled in and out by pressing 'T' (for texture) and all it does is stop the rubber band from erasing itself before it moves. The result is a rather pleasing moiré effect.

The listing is in two parts. Type in the first part and save it. Type in the second part, save it as 'GP2' after the first part and run the first part which chains the second part.

And that just about sums it up. If it seems confusing don't worry — it's a lot easier than it looks.

LISTING 1

```
>WIDTHc
    5REM" ******************************
   10REM" ******** GRAPH_PAC ********
   20REM" ****** (C) KIM ALDIS ******
   30REM" ********** 1984 **********
   35REM" ******************************
   50MODE7
   60PROCtitle
   70PROCmode
   80MODEmode%
   90PROCsetscr
  100PAGE=&D00:CHAIN"GP2"
  120REM"
  130DEFPROCsetscr
  140*FX4,2
  150*TV1
  160*FX219,224
  170*FX225,128
  180*FX226,138
  190*FX227,148
  200*FX228,158
  205*FX219,127
  210*FX229,1
  220VDU23,255,3,15,63,255,255,63,15,3,2
3,254,224,224,224,0,0,0,0,0,0,23,253,24,24
,0,195,195,0,24,24
  230VDU23;8202;0;0;0;28,0,31,7&30A,29,2
4,0;96;1279;1023;
  240COLOUR131:COLOUR0:GCOL3,3:CLS
  260ENDPROC
  270REM"
  280DEFPROCmode
  290PRINTTAB(11,15)CHR$130;"Screen Mode
";:INPUT,mode%
  300IF mode%=3 OR mode%=6 OR mode%=7 PR
INTTAB(9,15)CHR$(129)+CHR$(136)"TEXT ONL
Y MODE":VDU7:GOTO290
  310ENDPROC
  320REM"
  330DEFPROCtitle
  340FOR I%=0 TO 1
  350PRINTTAB(11,5+I%)CHR$(141)+CHR$(131
+I%);"GRAPH-PAC"
  360NEXT
  370PRINTTAB(8,8)CHR$(131),"(C) KIM ALD
IS 1984"
  380ENDPROC
```

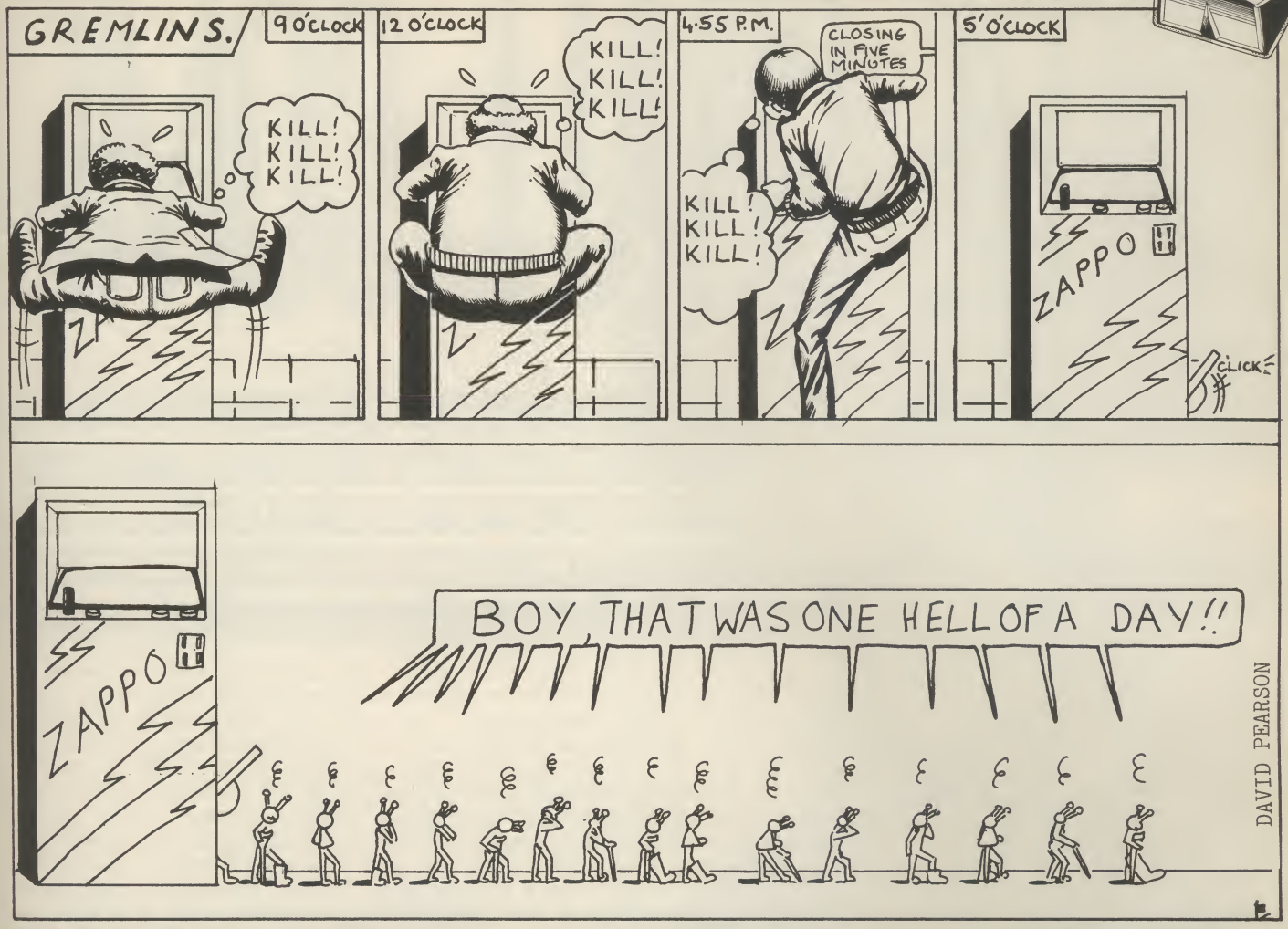
LISTING 2

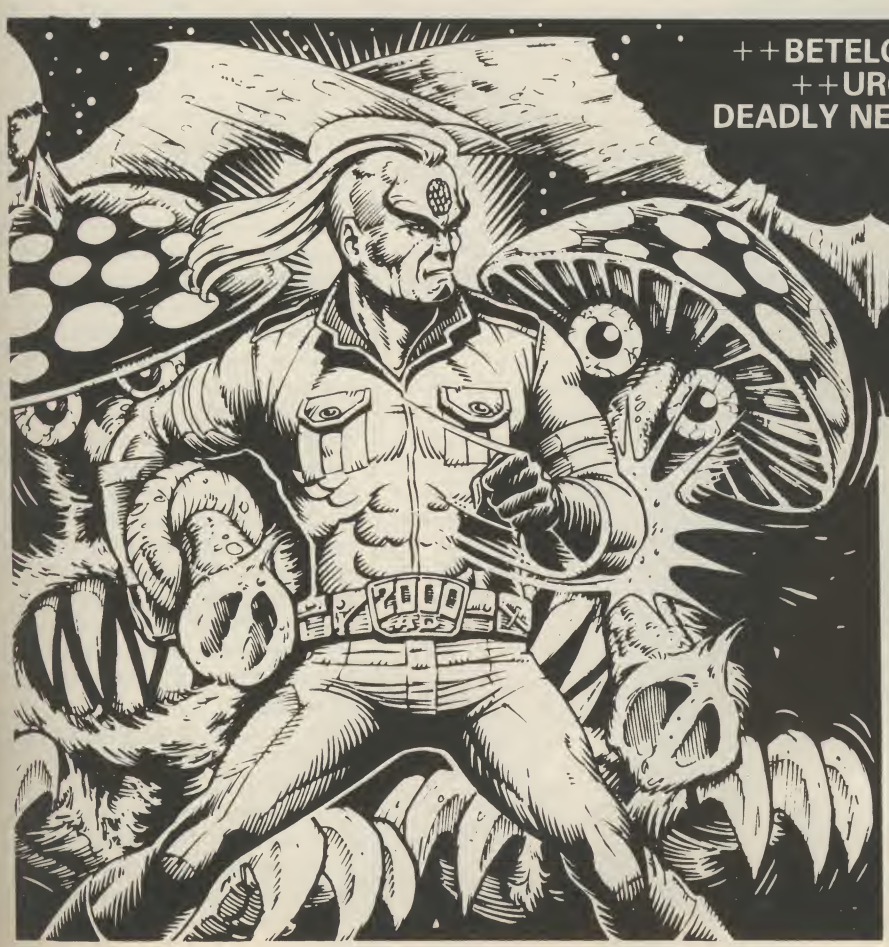
```
   10REM". ************************
   20REM" ******* GP2 ********
   30REM" *** (C) KIM ALDIS ***
   40REM" ************************
   50REM" ****** SAVE AS *******
   60REM" ******** GP2 *********
   70REM" ************************
   80ON ERROR RUN
   90PROCinit
  100REPEAT:PROCgraphics:UNTIL input%=81
OR input%=113
  110END
  120REM"
  130DEFPROCgraphics
  140*FX229,1
  150PROCgetinput
  160IF fix%=1 PROCfix
  170IF NOT text% PROCdraw
  180IF input%=ASC"T" text%=NOT text%
  190IF input%=27:PROCdraw:PROCclear:END
PROC
  200IF input%=32 PROCdraw:CLS:ENDPROC
  210IF input%<127 OR input%>143 PROCdra
w:ENDPROC
  220PROCdraw:ON input%-126 GOSUB 250, 2
60,270,280,290,300,310,320,330,340,350,3
60,370,380,390,400,410
  230ENDPROC
  240REM"
  250PROCchardef:RETURN
  260PROCfill(x%,y%):RETURN
  270curs%=NOT curs%:RETURN
  280line%=NOT line%:RETURN
  290PROCerase:RETURN
  300PROCcol:RETURN
  310PROCcoords:RETURN
  320PROCredefine:RETURN
  330PROCtext:RETURN
  340PROCsquare:RETURN
  350PROCcircle:RETURN
  360RETURN
  370PROCload_save:RETURN
  380xs%=xs%-ix%:RETURN
  390xs%=xs%+ix%:RETURN
  400ys%=ys%-iy%:RETURN
  410ys%=ys%+iy%:RETURN
  420REM"
  430DEFPROCgetinput
  440x%=1280-(ADVAL(1) DIV 50):y%=ADVAL(
2) DIV 71
  450fix%=ADVAL(0) AND 3:input%=ASC(INKE
Y$(0))
  460ENDPROC
  470REM"
  480DEFPROCdraw
  490*FX19
  500IF line%MOVExs%,ys%:DRAWx%,y% ELSE
MOVEx%,y%
  510IF curs%PROCcurs
  520ENDPROC
  530REM"
  540DEFPROCfix
  550GCOL0,col%
  560IFline%MOVExs%,ys%:DRAWx%,y%
  570xs%=x%:ys%=y%:GCOL3,col%
  580ENDPROC
  590REM"
  600DEFPROCtext
  610CLS:PRINTTAB(0,0)"Enter text:-"
  620text$=""
  630VDU5:REPEAT
  640PROCgetinput:MOVEx%,y%:PRINTtext$+C
HR$253:*FX19
  650MOVEx%,y%:PRINTtext$+CHR$253:IF(inp
ut%<32 AND input%>11) OR input%>(8 OR inp
ut%=127 THEN 670
  660text$=text$+CHR$(input%)
  670UNTIL fix%=1
  680GCOL0,col%:MOVEx%,y%:PRINTtext$:GCO
L3,col%:VDU4:xs%=x%:ys%=y%:CLS
  690PROCwait(1)
  700ENDPROC
  710REM"
  720DEFPROCcurs
  730GCOL3,3:MOVEx%-4*ix%,y%+4*iy%:VDU5,
253,4:MOVEx%,y%:GCOL3,col%
  740ENDPROC
  750REM"
  760DEFPROCcol
  770REPEAT
  780PROCgetinput
  790UNTIL input%>=128 AND input%<=131
  800col%=input%-128:GCOL3,col%
  810ENDPROC
  820REM"
  830DEFPROCerase
  840REPEAT:PROCgetinput:VDU5:MOVEx%,y%
  850VDU18,0,0,255:MOVEx%,y%:VDU18,3,3,2
55:MOVEx%,y%:VDU255
  860UNTILfix%=1:VDU4:xs%=x%:ys%=y%
  870PROCwait(1):GCOL3,col%
  880ENDPROC
  890REM"
  900DEFPROCload_save
 1100REM"
 1110DEFPROCcoords
 1120CLS
 1130len%=SQR((x%-xs%)^2+(y%-ys%)^2) : ang
le%=DEG(ASN((y%-ys%)/len%))
 1140PRINTTAB(0,0);"X:- ";x%TAB(0,1)"Y:-
";y%TAB(10,0)"Lgth:- ";len%TAB(10,1)"An
gle ";angle%
 1150ENDPROC
 1160REM"
 1170DEFPROCsquare
 1180IF input%=224 PROCdraw:PROCvdudef:E
NDPROC
 1190xs%=x%:ys%=y%:rot%=FALSE
 1200REPEAT
 1210PROCgetinput
 1220PROCdrsq(x%,y%,xs%,y%,xs%,ys%,x%,ys
```

CONTINUED ON PAGE 76

LISTING 2
contd.

```
%):PROCdrsq(x%,y%,xs%,y%,xs%,ys%,x%,ys%)
 1230IF input%=44 OR input%=46PROCrotate
 1240IFinput%=141xs%=xs%+ix% ELSEIF inpu
t%=142ys%=ys%-iy% ELSEIF input%=143ys%=y
s%+iy% ELSEIF input%=140xs%=xs%-ix%
 1250UNTIL fix%=1
 1260GCOL0,col%:IF NOT rot%PROCdrsq(x%,y
%,xs%,y%,xs%,ys%,x%,ys%)
 1270IF rot%PROCdrsq(xc%+r%*COS(th),yc%+
r%*SIN(th),xc%-r%*COS(al),yc%+r%*SIN(al)
,xc%-r%*COS(th),yc%-r%*SIN(th),xc%+r%*CO
S(al),yc%-r%*SIN(al))
 1280GCOL3,col%:PROCwait(1)
 1290rot%=FALSE
 1300ENDPROC
 1310REM"
 1320DEFPROCdrsq(x1%,y1%,x2%,y2%,x3%,y3%
,x4%,y4%)
 1330MOVEx1%,y1%:DRAWx2%,y2%:DRAWx3%,y3%
:DRAWx4%,y4%:DRAWx1%,y1%
 1340ENDPROC
 1350REM"
 1360DEFPROCrotate
 1370rot%=TRUE
 1380xc%=(x%+xs%)/2:yc%=(y%+ys%)/2
 1390de=0:r%=SQR((x%-xc%)^2+(y%-yc%)^2):
xr%=x%:yr%=y%
 1400REPEAT:th=ACS((xr%-xc%)/r%)+de:al=A
CS((xr%-xc%)/r%)-de:PROCgetinput
 1410PROCdrsq(xc%+r%*COS(th),yc%+r%*SIN(
th),xc%-r%*COS(al),yc%+r%*SIN(al),xc%-r%
*COS(th),yc%-r%*SIN(th),xc%+r%*COS(al),y
c%-r%*SIN(al))
 1420PROCdrsq(xc%+r%*COS(th),yc%+r%*SIN(
th),xc%-r%*COS(al),yc%+r%*SIN(al),xc%-r%
*COS(th),yc%-r%*SIN(th),xc%+r%*COS(al),y
c%-r%*SIN(al))
 1430IF input%=44 THEN de=de+PI/30ELSE I
F input%=46 THEN de=de-PI/30
 1440*FX21,0
 1450UNTIL fix%=1
 1460ENDPROC
 1470REM"
 1480DEFPROCcircle
 1490rot%=FALSE
 1500xs%=x%:ys%=y%:rot%=FALSE:angle=0
 1510REPEAT:PROCgetinput
 1520PROCdrsq(x%,y%,2*xs%-x%,y%,2*xs%-x%
,2*ys%-y%,x%,2*xs%-x%,y%,2*xs%-x%,2*ys%-y%)
 1530IFinput%=141xs%=xs%+ix%ELSEIF input
%=142ys%=ys%-iy% ELSEIF input%=143ys%=ys
%+iy%ELSEIF input%=140xs%=xs%-ix%
 1540IF input%=44 OR input%=46xs%=2*xs%-
x%:ys%=2*ys%-y%:PROCrotate:REMxs%=(xs%+x
%)/2:ys%=(ys%+y%)/2
 1550UNTIL fix%=1
 1560IF NOT rot%GCOL0,col%:p=(y%-ys%)/(x
%-xs%):s%=x%-xs%:MOVExs%,ys%+p*s%:FORa=0
TO 2*PI STEP PI/30:DRAWxs%+s%*SIN(a),ys%
+s%*p*COS(a):NEXT:GCOL3,col%
 1570IF rot%GCOL0,col%:PROCrotelipse:rot
%=FALSE:GCOL3,col%
 1580ENDPROC
 1590REM"
 1600DEFPROCwait(T%)
 1610TIME=0:REPEAT UNTIL TIME>T%*100
 1620ENDPROC
 1630REM"
 1640DEFPROCrotelipse
 1650len%=xr%-xc%:ang=PI/2-de:height%=yr
%-yc%:e=SIN(ang-PI/2):f=COS(ang-PI/2)
 1660MOVExc%+height%*e,yc%+height%*f
 1670FOR g=0 TO 2*PI STEP PI/30
 1680b=len%*COS(PI-ang-g):d=(len%-height
%)*COS(g):c=len%*SIN(PI-ang-g):h=d*e:j=d
*f
 1690DRAWxc%+b-h,yc%+c-j:NEXT:rot%=FALSE
 1700*FX21,0
 1710ENDPROC
 1720REM"
 1730DEFPROCfill(x%,y%)
 1740LOCALlx%,rx%,nx%,bx%
 1750IF POINT(x%,y%)>0 THEN ENDPROC
 1760fi%=1:la%=0
 1770PROCscan(x%,y%):PROCpush(lx%,rx%,y%
)
 1780REPEAT:PROCpull:PROCchscan(y%+iy%):
PROCchscan(y%-iy%):UNTIL fi%=la%+1
 1790ENDPROC
 1800REM"
 1810DEFPROCchscan(y%)
 1820LOCALnx%
 1830IF POINT(fx%,y%)=0 THEN nx%=fx% ELS
E PROCscanback(fx%,y%):nx%=bx%
 1840IF nx%>tox% THEN ENDPROC
 1850REPEAT:PROCscan(nx%,y%):PROCpush(lx
%,rx%,y%):PROCscanback(nx%,y%):nx%=bx%:U
NTIL nx%>tox%
 1860ENDPROC
 1870REM"
 1880DEFPROCpush(fx%,tx%,y%)
 1890la%=(la%+1)MOD 100
 1900fxq%(la%)=fx%:txq%(la%)=tx%:yq%(la%
)=y%
 1910ENDPROC
 1920REM"
 1930DEFPROCpull
 1940fx%=fxq%(fi%):tox%=txq%(fi%)
 1950y%=yq%(fi%):fi%=(fi%+1) MOD 100
 1960ENDPROC
 1970DEFPROCscan(x%,y%)
 1980PLOT77,x%,y%
 1990X%=stack%:Y%=stack% DIV 256
 2000A%=&0D:CALL&FFF1
 2010lx%=(!stack% AND &FFFF)
 2020rx%=(!(stack%+4) AND&FFFF)
 2030ENDPROC
 2040REM"
 2050DEFPROCscanback(x%,y%)
 2060PLOT92,x%,y%:X%=stack%:Y%=stack% DI
V 256:A%=&0D:CALL&FFF1
 2070bx%=(!(stack%+4) AND &FFFF)+ix%
 2080ENDPROC
 2090REM"
 2100DEFPROCinit
 2110text%=FALSE
 2120DIM stack% 8
 2130DIM fxq%(100),txq%(100),yq%(100),ve
r%(7),hor%(7)
 2140line%=TRUE:curs%=FALSE:col%=3:xs%=0
:ys%=0:vdu%=224:ix%=160/(?(&30A)+1):iy%=
4:GCOL3,col%:CLS
 2150ENDPROC
 2160REM"
 2170DEFPROCchardef
 2180VDU24,1279-24*ix%;1;1279;97;:GCOL0,
128:GCOL3,1:CLG:xv%=1280-24*ix%:yv%=96:V
DUS
 2190REPEAT:PROCgetinput
 2200FOR J%=1 TO 2:MOVExv%,yv%:VDU254:NE
XT
 2210IF input%=140 xv%=xv%-3*ix%ELSEIF i
nput%=141 xv%=xv%+3*ix% ELSEIF input%=14
2 yv%=yv%-12 ELSE IF input%=143 yv%=yv%+
12
 2220IF input%=32 MOVExv%,yv%:VDU254
 2230IF xv%>(1280-3*ix%) xv%=1280-24*ix%
ELSEIF xv%<(1280-24*ix%)xv%=1280-3*ix% ELS
EIF yv%>96 yv%=12 ELSEIF yv%<12 yv%=96
 2240UNTIL input%=127
 2250PROCdefvdu
 2260VDU4,24,0;96;1279;1023;:CLS
 2270ENDPROC
 2280REM"
 2290DEFPROCdefvdu
 2300countver%=0
 2310FOR ver%=92 TO 8STEP -12
 2320counthor%=0:mult%=128
 2330FOR hor%=1280-23*ix% TO 1280-ix% ST
EP 3*ix%
 2340hor%(counthor%)=POINT(hor%,ver%)*mu
lt%:counthor%=counthor%+1:mult%=mult%/2:
NEXT
 2350FOR I%=0 TO 7:ver%(countver%)=ver%(
countver%)+hor%(I%):NEXT
 2360FOR I%=0 TO 7:hor%(I%)=0:NEXT
 2370countver%=countver%+1
 2380NEXT
 2390VDU23,vdu%,ver%(0),ver%(1),ver%(2),
ver%(3),ver%(4),ver%(5),ver%(6),ver%(7)
 2400FOR I%=0 TO 7.ver%(I%)=0:hor%(I%)=0
:NEXT:vdu%=vdu%+1
 2410ENDPROC
 2420REM"
 2430DEFPROCredefine
 2440CLS:PRINTTAB(0,0)"Colour to be chan
ged":col1%=GET:PRINTTAB(0,1)"Changed to
colour":col2%=GET
 2450lcol%=col1%-128:acol%=col2%-128:VDU
19,lcol%,acol%,0,0,0:CLS
 2460ENDPROC
```





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THERE SHALL COME *Superheroes*

Been exposed to any gamma radiation lately? Had a radioactive spider bite you? Then you could appear in a Scott Adams adventure! STEVE KEATON probes the new quest for comic superstars . . .

UPON THE silver screen a man-mountain called Arnold poses dramatically. Triceps baking in the Mexican sun, he raises his broadsword high above his head and glowers. Around him, Sara Douglas' surly thugs (no doubt recognising this stance as a prelude to much physical damage) groan with dismay. An ambush, they realise, was not the wisest of moves. With a grunt Schwarzenegger lunges forward and severed heads and sundry organs fly carelessly into the air. The audience whoop in wide-eyed delight.

The movie of course is *Conan the Destroyer*, to my mind the finest attempt yet to capture the real glory of Sword and Sorcery on film and indispensible viewing for armchair adventurers. Why though, I wonder in these days of rampant licensing has the genre's premier hero gone unconverted? I mean, Conan would be a natural for his own adventure series! As if in agreement Arnold swings a fist the size of a small truck and a passing horse crumples into an undignified heap.

An hour or so later, following a climactic battle with one of Carlo Rambaldi's grosser special effects, I muse further on the subject. Surely the Marvel Comics Group, whose innumerable Conan publications have done much to popularise the character, could adapt him? Their recent coupling with Scott Adams' Adventure International company — for the *Questprobe* adventure game series — certainly gives them the machinery (the late Robert E. Howard's estate notwithstanding). I put this to Mike Woodruff, of Adventure International's UK appendage, Calistro.

"Conan?" he exclaimed, dashing my hopes with a brick, "I think that's unlikely. He's certainly not due to appear in any of the *Questprobe* games. We'll only be using characters from the standard Marvel Comics Universe, like *Spider-Man*, *The Hulk* and the *Fantastic Four*. It's a themed series and I mean, there's no way that Spider-Man is likely to meet Conan is there?" he chortles knowingly.

Of course that's highly possible in Marvel's many team-up titles but his point is clear. *Questprobe* is strictly for the superhero brigade. Closet Cimmerians like myself it seems have been left

out in the cold. Some people clearly have no vision.

As this issue of BIG K shambles aimlessly on its way toward the printing press details are sparse on the new *Questprobe* game, *Spider-Man*. It's only a third complete. "All I can reveal," says Mike "is that the adventure co-stars Madame Web and the Sandman as well as some of the best graphics yet seen on a home micro. We've developed a special graphics routine for it which will enable us to make the most of available memory. As with *The Hulk* it'll be available for a host of machines. In addition to the Spectrum, CBM64, Atari (32K/48K disc), Apple (disc), Dragon 32, TRS80 and BBC we aim to produce a version for the Amstrad and possibly MSX. We've a team of two programmers and three artists working on the U.K. conversions." Mysterious Adventures' mainman, Brian Howarth who was originally mooted to convert the games left the project some time ago.

"Initially Scott Adams writes all his adventures in test-only form on his 48K Model 1 Tandy ," continues Mike. "Then he forwards them to Marvel for story approval and illustrations; a Marvel artist draws each scene in the game. The final coding is then done in Florida (Atari, Apple, CBM disc versions) and the U.K. Incidentally, Scott has actually redesigned the interpreter in his adventure-generator for *Spider-Man*, to allow for full sentence input. It's the first time he's offered more than the usual verb/noun format in one of his adventures!"

Adams is of course something of a coffee-table name amongst Dorkslayers. However his initial reluctance to cater for the U.K. market has left him less than well played. I suspect I'm not alone in claiming my introduction via *The Hulk*! It's a game that's been steadily driving me off my trolley since its release. Has anyone else had trouble with the ants or is it just me?

Spectrum, CBM64 and Apple/Atari owners will have enjoyed the best *Hulks* as these are the only versions to feature both text 'n' graphics. Regular readers will no doubt be amazed at this statement knowing of my well documented dislike for graphic adventures! But for once I actually believe that the art adds to the gameplay.

Thirty individual drawings are featured and these are augmented to great effect by a number of stylish overlays. A barren terrain f'rinstance is suddenly made to sprout anthills and then giant ants (curse 'em!) Such invention more than compensates for Scott's stilted, prehistoric prose style.

Initially bound to a chair in the guise of puny Bruce Banner you must bust loose and ransack the Chief Examiner's dodgy dimension for glowing gems (dunno why). The Chief Examiner by the way is the overseer of the entire *Questprobe* series. Having successfully trashed the chair you're well on your way to encountering former superhero colleagues *Doctor Strange* and Henry Pym a.k.a. the *Ant Man* (a role Pym actually gave up some time ago) as well as some grade A villains like *Ultron* and *Nightmare*. A *Questprobe* comic (which must be said is fairly dire) sets the scene for the game.

Much as I like *The Hulk* though, I don't really think it cuts much ice as a genuine Marvel Comics spin-off. Try and smash the place up in the grand green tradition and you're curtly told that 'the Hulk (tm) is no vandal'. Clearly an untruth! However Woodruff is adamant that the series is authentic! "We've a big comic collection in the office and our main artist, Teoman Irmak is what you might call a 'True Believer'. 'The Official Handbook of the Marvel Universe' is our bible. We use it as a reference source to avoid any embarrassing mistakes."

This might explain why the prog seems free of any exceptionally silly bugs. A shame as I've always regarded blunders as plus points. I can only advise frustrated (Spectrum) Hulkers not to beat the ENTER key (with their heads) too often as you'll find yourself locked into a 'I can't do that ... yet!' cycle. Even suicide brings no release. Keep banging away and the game NEWs itself. If anyone finds a more notable gaff let me know.

While unusual the Marvel/Adventure International collaboration is by no means unique. The precept was set some time ago in the States by Marvel's comic rivals, DC and Atari — then both owned by Warner Communications. The two shared a relationship that stretched back through a number of early releases for the elderly 2600 VCS. Titles such as *Berserk*, *Defender* and *Star Raiders* were all packaged with free half-size comic books. This crossover peaked with the release of the multi-cart graphic adventure *Swordquest*, a set of games not unlike the *Raiders* cart in style. The comics actually helped flesh-out the videogames, adding plot and motive to the four ROM episodes. They also contained clues, significant as Atari were offering an astonishing $150,000 worth of prizes to those that could solve the series. The challenge never made it across the pond.

Not to be outdone Marvel/Scott Adams are also offering a prize, although they're playing it cagey at the moment. No one knows what it is. With another three years of *Questprobe* still to run it had better be good! Shame about Conan though ...

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SIMON SIMONS

```
  0>REM ***SIMON**By A.SHAW****
  1 PAPER 0: BORDER 1: BRIGHT 1
: FLASH 0: INVERSE 0: INK 7: OVE
R 0: CLS : FOR f=0 TO 21: PRINT
AT f,0; PAPER f/3;,,: NEXT f: PA
PER 6;"BTB■■■
```

SIMON SIMON

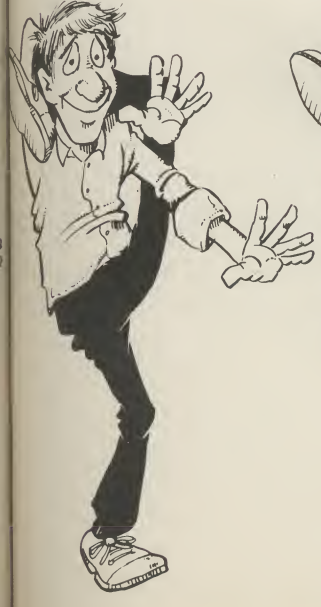
SIMON is a well-known smart-asteroid who socks posers at you — and do you ever feel a nerd when you can't do what Simon Says! Overall, an interesting problem in human psychology . . . but in the meantime here's a scroting li'l listing for you Specced-up punters out there to type in. Info in the prog, chums.

by A. SHAW

runs on Sinclair Spectrum

```
g+1: BEEP .005,g: NEXT g: NEXT f
4120 FOR f=60 TO -60 STEP -8: BE
EP .005,f: BEEP .005,-f: NEXT f
4130 FOR f=1 TO 100: PRINT AT IN
T (RND*4)+7,INT (RND*31);" ": BE
EP .005,f-45: NEXT f
4140 FOR f=0 TO 22: LET t=USR 32
30: BEEP .05,f: NEXT f
4150 FOR f=1 TO 200: PLOT INK RN
D*4+4,INT (RND*255),INT (RND*175
): OUT 254,INT (RND*255): NEXT f
4160 INK 0
4170 INK 5: PLOT 110,70: DRAW 0,
20: DRAW 10,0: DRAW 0,-5: DRAW 5
,5: DRAW 10,0: DRAW -10,-10: DRA
W 10,-10: DRAW -10,0: DRAW -5,5:
 DRAW 0,-5: DRAW -10,0
4180 PLOT 112,72: DRAW 0,16: DRA
W 6,0: DRAW 0,-7: DRAW 7,7: DRAW
 6,0: DRAW -8,-8: DRAW 8,-8: DRA
W -6,0: DRAW -7,7: DRAW 0,-7: DR
AW -6,0
4190 PLOT 103,62: DRAW 39,0: DRA
W 0,36: DRAW -39,0: DRAW 0,-36
4200 DRAW 0,36: DRAW 9.5,15: DRA
W 20,0: DRAW 9,-15
4210 PRINT AT 8,14; OVER 1;"BIG"
4220 FOR f=80 TO 78 STEP -1: PLO
T 110,f: FOR g=1 TO 4: DRAW 2,2:
 DRAW 2,-2: NEXT g: NEXT f
4300 BORDER 0: PRINT AT 2,11; IN
K 3;"S I M O N "
4310 PRINT AT 4,2; INK 5;"Writte
n by Anthony James Shaw "
4320 PRINT AT 6,14; INK 6;"for"
4322 INPUT "": LET s$="s(ii)m(uh
)n  riten b(ii) antun(ee) j(ay)
mz (sh)(or)  f(or)  bi(gg) k
(ay)": PAUSE 320
4324 LET s$="(th)anky(ouu) f(or)
 pl(ay)i(ng)  (ii) h(oo)pd y(ou
u) en,(oy)d it"
4326 PAUSE 200: LET s$="(gg)(uh)
(dd) b(ii)"
4330 DIM d$(7): FOR f=1 TO 7: BR
IGHT 1: FOR g=7 TO 14: PRINT AT
g,12; INK f; OVER 1;d$: NEXT g:
NEXT f: GO TO 4330
4999 STOP
5000 REM auto save routine
5010 CLEAR : SAVE "SIMON SAYS" L
INE 0: VERIFY "SIMON SAYS": RUN
6000 LET Z=8: CLS : PRINT AT 2,4
; INK 4; BRIGHT 1;"
 SIM
ON."
6010 PRINT INK 5;'" @ Anthony J
 Shaw 27.04.84"
6020 PRINT INK 6;'" Welcome to "
; INK 2;"S"; INK 4;"I"; INK 7;"M
"; INK 6;"O"; INK 2;"N"
6030 PRINT INK 6;" This game is
 based on the  electronic gam
e called SIMON.  The idea of S
IMON is to repeat a sequence of
sounds and colourswhich SIMON ha
s produced.When  you get it rig
ht another sound  and colour is
added to the  sequence.This
goes on until  there are ten
in the sequence,a new sequence w
ill then be  generated but
will be shown  slightly faste
r."
6040 GO SUB 6500
6050 LET Z=17: PRINT AT 3,0; INK
 6;" The screen""looks like""t
his:-"
6051 PLOT 136,96: DRAW 0,-34: DR
AW -34,0: DRAW 0,34: DRAW 34,0
6052 PRINT AT 10,13; INK 2;" 4 ";
 INK 6;" ";AT 11,13; INK 2;" ";
; INK 6;" ";AT 12,13; INK 7;" ";
"; INK 4;" ";AT 13,13; INK 7;"
 "; INK 4;" "
6060 FOR f=-104 TO 43 STEP -16: P
LOT 207,f: DRAW 41,0: DRAW 0,-9:
 DRAW -41,0: DRAW 0,9: NEXT f
6054 PRINT AT 9,19;"GO'S :";AT 1
1,19;"TOTAL:";AT 13,19;"LEVEL:";
AT 15,13;"ILLEGAL KEY:";AT 9,26;
"00000";AT 11,26;"00000";AT 13,2
6;"00000";AT 15,26;" "
6060 PRINT AT 17,0; INK 6;" Ther
e are four colours and foursound
s.These relate to the keys as sh
own"
6065 PAUSE 5: PRINT AT 20,10;"1
 2 3 4": PLOT 79,17: DRAW 56,0: D
RAW 0,-10: DRAW -56,0: DRAW 0,10
6070 PAUSE 500: FOR N=1 TO 4: LE
T A$=STR$ N: LET A=1.5: PRINT AT
 20,8+N*2; OVER 1; PAPER 1; INK
7; BRIGHT 1; FLASH 1;" ": GO SUB
 1000: PAUSE 30: PRINT AT 20,8+N
*2; OVER 1; PAPER 0; INK 7;" ":
NEXT N
6075 GO SUB 6500
6080 PRINT AT 9,19; PAPER 1; INK
 7; BRIGHT 1; FLASH 1; OVER 1;"
  ": PRINT AT 17,0; INK 6;" A
counter records how far into th
e sequence you are and is  re
set when the sequence is reset"
6090 PAUSE 500: FOR f=1 TO 9: PR
INT AT 9,30;f: BEEP .5,f: NEXT f
: PRINT AT 9,30;"0": PRINT AT 9,
19; INK 7;"GO'S :"
6095 GO SUB 6500
6100 PRINT AT 11,19; FLASH 1; IN
K 1; PAPER 7; OVER 1; BRIGHT 1;"
  "

6105 PRINT AT 17,0; INK 6;" The
second counter "TOTAL"  is th
e same as "GO'S" except  that
it is not reset when the  seque
nce is generated"
6106 PAUSE 500: PRINT AT 11,19;
OVER 1;"  "
6107 GO SUB 6500
6110 PRINT AT 13,19; BRIGHT 1; I
NK 1; PAPER 7; FLASH 1; OVER 1;"
  ": PRINT AT 17,0; INK 6;"
The last counter is the skill l
evel.This ranges from 1 (easy) t
o 9 (hard).This is incremented e
very time a new sequence is  g
enerated"
6115 PAUSE 500: PRINT AT 13,19;
INK 7; PAPER 0; OVER 1;"
  "
6116 GO SUB 6500
6120 PRINT AT 15,13; INK 7; PAPE
R 1; BRIGHT 1; OVER 1; FLASH 1;"
  ": PRINT AT 17,0; IN
K 6;""ILLEGAL KEY" flashes if a
key  which is not between 1 & 4
is  pressed.E.G. press some key
s andsee what happens.(X-exit)"
6130 LET i$=INKEY$: IF i$<>"" TH
EN GO TO 6130
6131 LET i$=INKEY$: IF i$="" THE
N GO TO 6131
6132 IF (i$<"1" OR i$>"4") AND i
$<>"x" THEN PRINT AT 15,26; PAPE
R 2; INK 6; FLASH 1;" ": BEE
P .5,0: BEEP 1,-20: PRINT AT 15,
26; PAPER 4;" ": GO TO 6130
6133 IF i$="x" THEN GO TO 6140
6134 IF i$="1" THEN PRINT AT 10,
13; INK 0; OVER 1; PAPER 2; BRIG
HT 1;" ";AT 11,13;" ": BEEP a,
1: PRINT AT 10,13; PAPER 0; BRIG
HT 0; INK 2;" 4 ";AT 11,13;" 1"
6135 IF i$="2" THEN PRINT AT 10,
15; INK 0; PAPER 6; BRIGHT 1; OV
ER 1;" ";AT 11,15;" ": BEEP a,
2: PRINT AT 10,15; PAPER 0; BRIG
HT 0; INK 6;" ";AT 11,15;" "
6136 IF i$="3" THEN PRINT AT 12,
13; PAPER 7; INK 0; BRIGHT 1; OV
```



TURN TO PAGE 116

HERE COME THE

And foremost in their ranks is one DAVID MACHEN. To say that databases and baud rates send him into ecstasy would be understating it. Elec-

SO YOU have saved up your pennies, and you have finally decided that you are going to splash out and get yourself a nice, new modem. The idea of making midnight phone calls to a Swiss bank's central computer, and transferring all the money into your account appeals to you, doesn't it? Well, before you part with your hard-earned green-backs, you must decide what sort of modem you require. And also what factor you can afford your phone bill to multiply by.

ACOUSTIC: NEEDS QUIET

Firstly, you must decide whether you want an "acoustic coupler", or a "hardwired" modem. The former is the simpler of the two, and it consists of two rubber grips, into which you hammer your telephone handset. Inside the grips are a microphone, and a speaker, which correspond to the phone's earpiece and mouthpiece respectively. The idea is that the bleeps and whistles which are sent over the phone to represent the data are physically generated, and transmitted in much the same way as speech. This is fine, unless you have a non-standard phone (Trimphone, Snoopy, etc.), which refuses to fit properly into the rubber grips, or if you live next door to a Wimpey construction site. You see, any background noise is picked up, and if it is loud enough, it will decimate your screen display, throwing garbage all over the place. You try using an acoustic coupler to print out a Micronet frame with a nearby dot matrix printer. Forget it! However, on the plus side is portability, and the fact that you can use it on a telephone that is not yet equipped with Uncle Buzby's new socket. If you intend to use your modem in a phone box, for example, you would need an acoustic coupler. Alternatively, for those without phone boxes. . . .

HARDWIRE: COSTS MORE

The hardwired modem is a much more discreet affair. They come in all shapes and sizes, and they are generally just boxes, with the odd switch or LED on the front. The connections with a hardwired modem are much more reliable. You plug the modem into your computer, and also into your phone socket (if you haven't got one of these, your friendly local British Telecom office will fit you one for around £15). You then plug your phone into the modem. When you want to use your phone for normal purposes, you do so as you would without the modem attached. However, when you want to use the computer with your phone, you switch the link to the telephone out of the circuit, so that you have got a direct link, via a wire, from the computer to the phone jack. Say goodbye to background noise. However, as you might expect, a hardwired modem will cost you considerably more than an acoustic coupler, although the prices are falling now, as micro communication becomes more popular, and the competition heats up.

SPEED OF USE

The second thing you must decide on is what you want to use your modem for, as different services use different speeds of data transfer. For most modem users, the most frequently accessed database is Micronet 800. This is a sub-database on Prestel, British Telecom's viewdata service, and is operated rather like an electronic computer magazine. In fact, Micronet is run by East Midlands Allied Press (EMAP) who also publish a couple of "low-technology" paper computer magazines. However, it goes a bit further than that. Imagine a magazine consisting of around 40,000 pages, which are being updated *fairly* frequently (are you listening, letters editor?), with daily news updates, electronic mail facilities so that you can send messages to other users, games, prize competitions you can enter there and then using the two-way facilities of your modem, and FREE software, that you can download from the database.

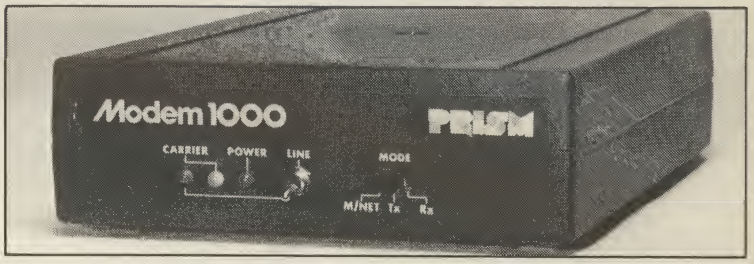
Micronet 800 uses what is known as the viewdata standard 1200 baud/75 baud speed. That is to say you can receive around 120 characters a second, and send about 5. Okay for receiving Prestel pages,

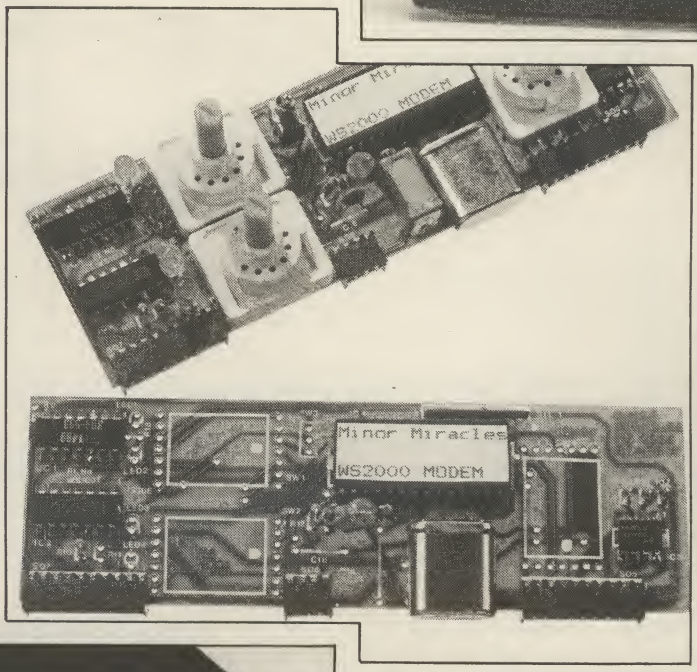
HACKERS!

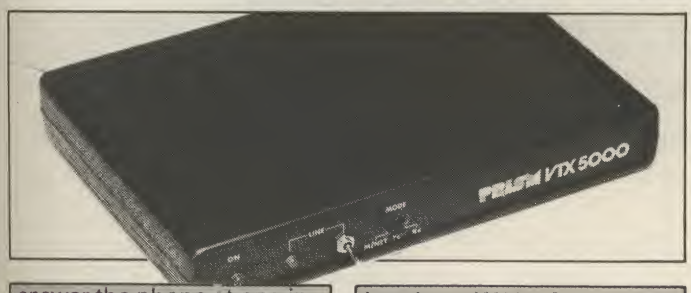
tronic mail and down-line loading turn him on, too. See how it all grabs you, and try . . .

LIVING IN THE MODEM WORLD!

but a bit slow to say the least if you are trying to send a lot of information. For that reason, the other common speed is 300/300 baud, or the CCITT V.21 standard. This is used on computer "bulletin boards" which are rather like versions of Prestel in miniature, and are run by home enthusiasts using micros much the same as yours. However, each board has a different style, almost a character of its own, which it usually takes from its compiler, known as the "sysop" (systems operator). These dedicated computer enthusiasts not only compile the system, but have often built the hardware and written the software themselves. They must also have modems with what is known as an "auto-answer" capability, so that they do not have to answer the phone at one in the morning when some insomniac hacker wants a butcher's at their board. There is now a system available from the Notting Dale Information Technology Centre (which was, you may remember, featured on BBC TV's "Micro-Live") which is designed to help those with less experience (or less time) to start their own bulletin-type system. It is called CommunITel, and it consists of a DACOM auto-answer, auto-dial modem, which will operate at 1200/75, 75/1200 and 300/300 baud, plus the software to drive a bulletin board. The price? Around £300. Contact the Notting Dale ITec at 189 Freston Road, London W10 for more details.







LEGAL QUESTION

One of the more subtle problems of buying a modem is the question of "is it legal to use once I've got it home?" Unless the modem that you buy has a "BT Approved" sticker on it you are breaking the law by using it on a British Telecom phone system, and could have your phone cut off.

Once you have your modem, you will also need some software to make it work. This again depends on what type of communication you want to use your micro for, and very often nowadays, you can pick up a complete package which includes the modem and software. Software can range from the simplest of dumb terminals, to the not-so-dumb systems capable of downloading telesoftware, and preparing message frames off-line. Some of the software is a bit pricey compared to games, but you get what you pay for. As always, shopping around can be very profitable.

WHAT'S THE DAMAGE?

Finally, we come to the inevitable question. How much is it all going to cost? Well, I'm afraid that it doesn't come cheap. A modem can cost you upwards of around £50. Then you have to pay your subscription for both Prestel and Micronet. You can just pay for Prestel, but then you won't be able to access the Micronet pages, as they are in a Closed User Group. Prestel costs £5 a quarter, and Micronet £8 a quarter. That works out to around £1 a week: not bad if you consider the price of your daily newspaper. Then there are access charges. If you use the system in "office hours" (between 8am and 6pm Monday-Friday, or between 8am and 1pm on Saturday) then it will cost you 5p per minute. However, there is no charge outside these hours. You should contact Micronet 800 on 01-278 3143 for subscription details. And, last but by no means least, are your phone charges. This, of course depends on how much you use your modem. You can normally access Prestel on a local phone call. But let me leave you with a true horror story of a gentleman who accessed a Stateside database, in the Olympic City of Los Angeles. He didn't *quite* put the phone down properly . . . and went on holiday for the weekend. When he returned, he found his phone bill to be £3K. . . .

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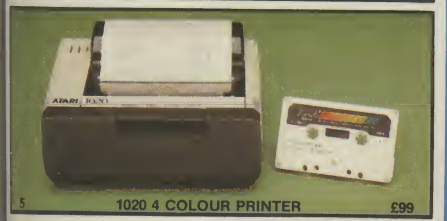

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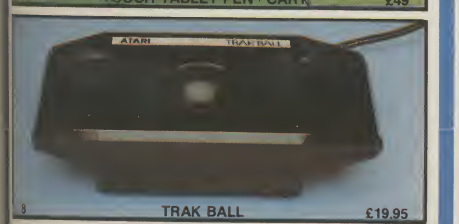

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ARCADE ALLEY

BIG K

DEX'S STARLIGHT RUNNER

It's tough being a laser-based Intergalactic Hero; even tougher when your immediate ancestor was Dork the Daring of Dragon's Lair *fame. GIOVANNI DADOMO shells out the shekels for a bout of* Space Ace *role playing.*

FROM THOSE wonderful people who gave us the superb animation game *Dragon's Lair* comes *Space Ace*, a second adventure in the same medium but this time, as the name suggests, with an intergalactic theme. The action's instant: no sooner do you drop your loot in the slot than the slight, fair-haired hero loses his bounteously curved female companion. Worse still, he has no time to mourn her kidnapping because the asteroid on which he's perched is immediately blasted to bits by an immense villain with blue skin and an Oriental top-knot, whose gross guffaws and belly to match give him a distinct resemblance to Popeye's old punchin' pal, Bluto.

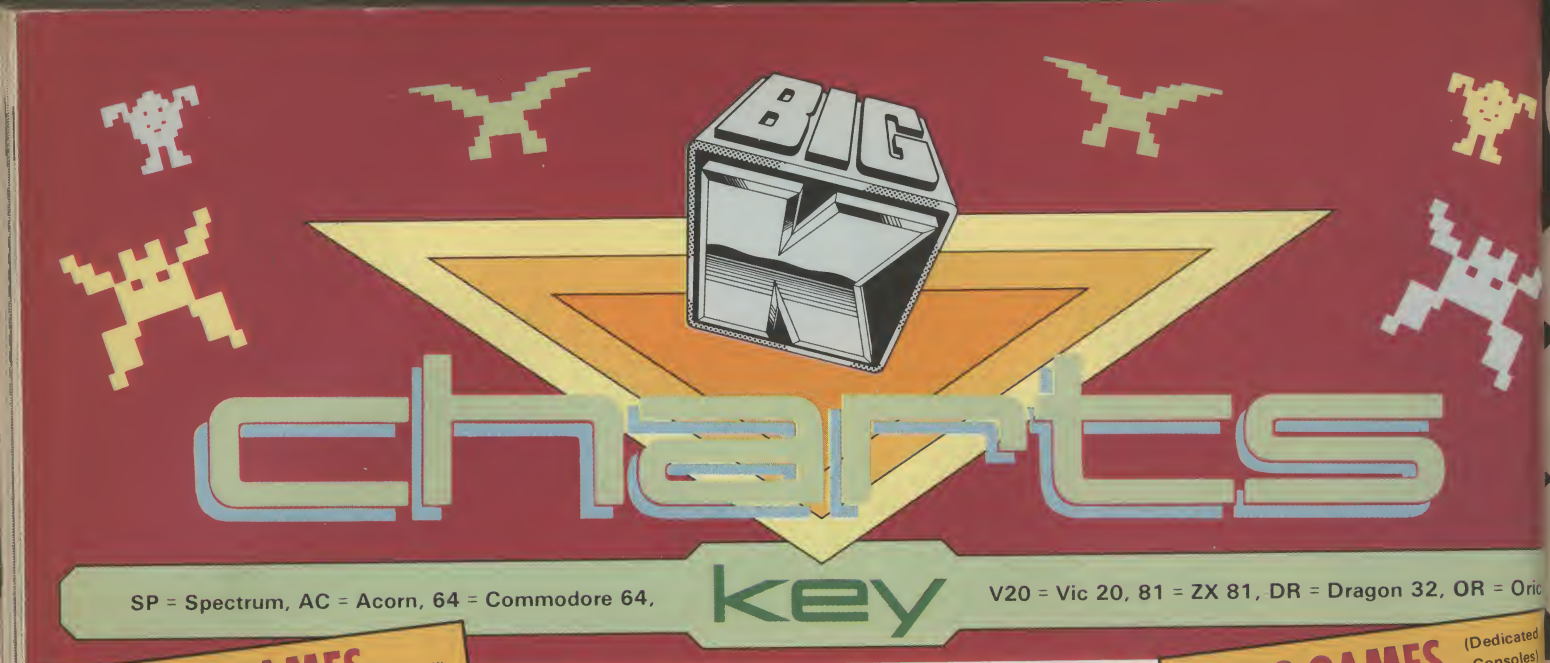
In the initial stages of the game one's shown the location of a "safe" spot by a blinking blue light effect. Activate the joystick in the appropriate direction and young Dexter (for such is our hero's name) obediently leaps behind a conveniently placed boulder — just in time to avoid a deadly ray-gun blast. Or not, as in the case of this novice, who took three attempts before even this first minor obstacle was conquered. From there on in the perils come thick and fast. A leap lands Dex on a handy hillock which is promptly atomised by a trio of hovering saucers. Skip left if you can and you'll maybe reach the safety of a spaceship, Dex! But leave this a second too late and you're caught in the deadly grip of a giant Meccano-type monstrosity that gleefully hurls you into a bottomless pit.

On top of that, there's a vast, weird, 'Alien'-type spacecraft to be negotiated, with peril piling on peril as Dexter tries to track down his missing miss before she's done away with. In the meantime, of course, attempting to keep his own goose uncooked as he faces: a wild ride on a series of geometric surfboards that break up under his very feet, a whole catalogue of monsters — reindeer-horned wolfy things, giant, multi-coloured carnivores, a pack of werecats — and sundry confrontations with the aforementioned blue meanie.

At one point he saves his girl only to see her suddenly transformed into a sickly blue alter ego of himself — intent on murderous mayhem — what else? Another rivetting sequence occurs when the ship's suddenly flooded and he almost gets eaten by a giant fish. He avoids that only to find himself the intended dish of the day for an even bigger finned fiend (cue 'Jaws' music, of course).

Just in case you get bored there are sporadic appearances of the word 'ENERGIZE' on the screen. Press the matching word-button and meek, weedy Dexter is suddenly transformed into a muscle-on-muscle Arnold Schwarzenegger type. When this happens you might *think* you're laughing (I did) but the big pectorals etc. are useless when not allied to a continued agility at the controls. Forget that and you'll just end up a Big Thingy's dinner.

Fast, furious, funny, tremendously varied, this is quite simply one of the most amusing arcade games to have come along since its 'DL' sibling. If you're a sucker for animation anyway (and this is miles better than your feeble 'He-Man' type cut-out) then look no further. Pricey, but well worth it. *Mucho* thrill-power, to borrow a fine, familiar phrase. Go to it!



SP = Spectrum, AC = Acorn, 64 = Commodore 64, **key** V20 = Vic 20, 81 = ZX 81, DR = Dragon 32, OR = Oric

TOP 30 GAMES (Retail)

				SP	AC	64	V20	81	DR	OR	Price
1	14	DALEY THOMPSON'S DECATHLON	Ocean	★							£7.90
2	4	FULL THROTTLE	Micromega	★							£6.95
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21	22	PSYTRON	Beyond	★							£7.95
22	13	TRASHMAN	New Generation/Quicksilva	★	★						£5.95
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30	12	BLUE THUNDER	Richard Willcox	★						★	£5.50

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VIDEO GAMES (Dedicated Consoles)

1	(1)	POLE POSITION (Atari)
2	(3)	SPACE SHUTTLE (Activision)
3	(2)	SUPER COBRA (Parker)
4	(—)	PITFALL 2 (Activision)
5	(8)	MARIO BROTHERS (Atari)
6	(4)	POPEYE (Parker)
7	(25)	MS PAC-MAN (Atari)
8	(5)	ENDURO (Activision)
9	(7)	DEATH STAR BATTLE (Parker)
10	(6)	Q-BERT (Parker)
11	(—)	FROSTBITE (Activision)
12	(19)	GALAXIAN (Atari)
13	(—)	PHOENIX (Atari)
14	(12)	BATTLE ZONE (Atari)
15	(11)	FROGGER (Parker)
16	(14)	DONKEY KONG (CBS/Coleco)
17	(13)	SNOOPY VS THE RED BARON (Atari)
18	(9)	DIG DUG (Atari)
19	(10)	MOON PATROL (Atari)
21	(15)	PITFALL (Activision)
21	(21)	PAC-MAN (Atari)
22	(18)	BIG BIRD EGG CATCH (Atari)
23	(16)	RIVER RAID (Activision)
24	(17)	TUTANKHAM (Parker)
25	(24)	COOKIE MONSTER MUNCH (Atari)
26	(29)	SPACE INVADERS (Atari)
27	(20)	JUNGLE HUNT (Atari)
28	(27)	CENTIPEDE (Atari)
29	(22)	SMURFS (CBS/Ceoleco)
30	(30)	ROBOT TANK (Activision)

Compiled by MRIB Computer.

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PILOT 64 (Abbex)
RALLY SPEEDWAY (Aventure International)
SPACE PILOT (Anirog)
TEST MATCH (CRL)

MAGIC POINTER

Here's a screen poke grid for you CBM 64 users. It will greatly simplify calculating the character and colour on the screen.

by M. R. HODGKINSON

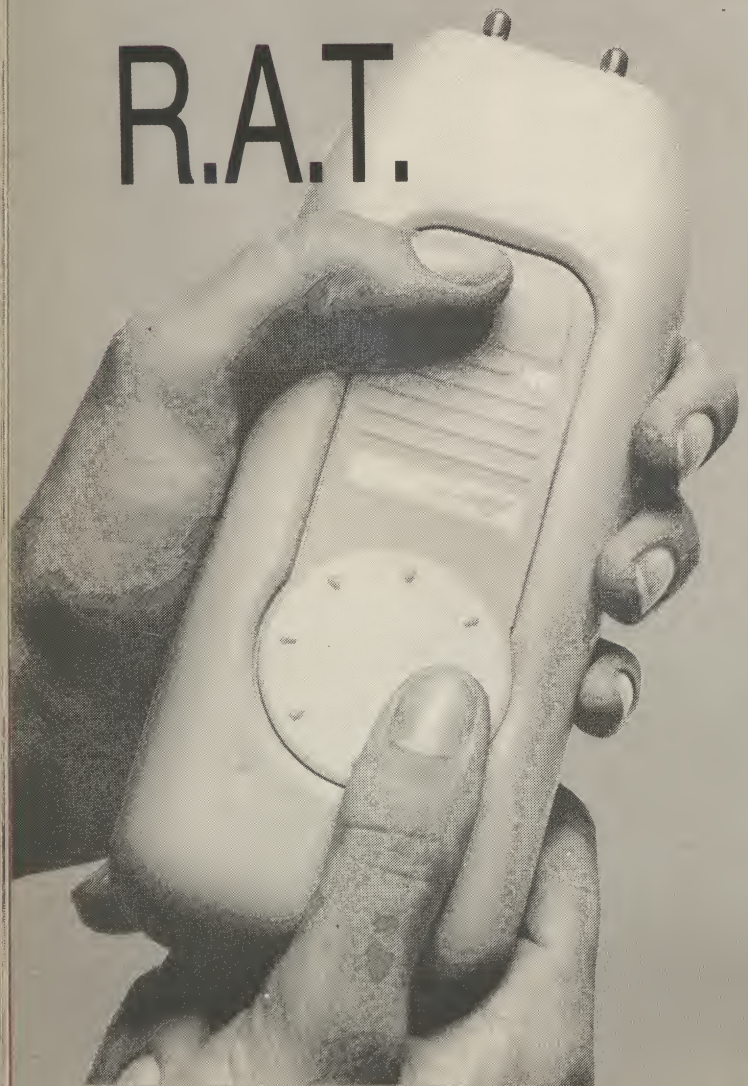
```
READY.

1 GOTO1000
10 POKE53272,(PEEK(53272)AND240)+12
20 FORI=12288TO12288+7:READA:POKEI,A:NEX
T:REM  REDEFINE @
30 DATA255,129,129,129,129,129,129,255
40 FORI=12528TO12528+7:READA:POKEI,A:NEX
T:REM  REDEFINE ^
50 DATA255,195,165,153,153,165,195,255
60 FORI=12512TO12512+7:READA:POKEI,A:NEX
T:REM  REDEFINE \
70 DATA255,0,0,0,0,0,0,0
80 GOTO10000
1000 PRINT"{CLR}";:POKE53280,7:POKE53281
,7:PRINTCHR$(149)
1010 PRINT"{CUR RT}{CUR RT}{CUR RT}{CUR
RT}{CUR RT}{CUR RT}CHARACTER/COLOUR SCRE
EN GRID"
1020 PRINT"{CUR RT}{CUR RT}{CUR RT}{CUR
RT}{CUR RT}{CUR RT}{*T}{*T}{*T}{*T}{*T}{
*T}{*T}{*T}{*T}{*T}{*T}{*T}{*T}{*T}{*T}{
*T}{*T}{*T}{*T}{*T}{*T}{*T}{*T}{*T}{*T}{
*T}{*T}{*T}"
1030 PRINT"{RED}{CUR RT}{CUR RT}{CUR RT}
THE AIM OF THIS LITTLE PROGRAM IS"
1040 PRINT"TO GREATLY SIMPLIFY CALCULATI
NG THE"
1050 PRINT"CHARACTER AND COLOUR POKES ON
 THE SCREEN";
1060 PRINT"MEMORY MAP"
1070 PRINT
1080 PRINT"{BLK}{CUR RT}{CUR RT}{CUR RT}
USE THE FOLLOWING KEYS TO CONTROL"
1090 PRINT"THE CURSOR:-"
1100 PRINTTAB(12)"'Z' MOVES LEFT
1110 PRINTTAB(12)"'X' MOVES RIGHT
1120 PRINTTAB(12)"';' MOVES UP
1130 PRINTTAB(12)"'/' MOVES DOWN
1140 PRINT"USE '=' TO 'MARK' YOUR DESIRE
D CO-ORD."
1150 PRINT"USE 'C' TO CANCEL A COORDINAT
E"
1165 PRINT
1170 PRINT"{RED}THE GRID COORDINATES ALT
ER IN RESPONSE"
1180 PRINT"TO THE CURSOR MOVEMENT. SIMPL
Y NOTE EACH";
1190 PRINT"COORDINATE AS YOU 'MARK' IT,
AND THEN"
1200 PRINT"USE IT TO PLAN YOUR DISPLAY"
1210 PRINT"{BLU}{CUR DN}{CUR RT}{CUR RT}
{CUR RT}{CUR RT}{CUR RT}{CUR RT}{CUR RT}
{CUR RT}{CUR RT}PRESS A KEY TO START"
1220 GETA$:IFA$=""THEN1220
1230 PRINT"{CUR UP}{CUR UP}{CUR UP}":FOR
U=0TO39:PRINT" ";:NEXT
1240 PRINT"{CUR RT}{CUR RT}{CUR RT}{CUR
RT}{CUR RT}{CUR RT}WAIT FOR THE DATA TO
BE READ"
1250 GOTO63000
10000 PRINT"{CLR}":POKE53280,1:POKE53281
,1
10010 FORT=0TO879:PRINT"{LT BLU}@";:NEXT
10020 FORS=0TO39:PRINT"{LT BLU}\";:NEXT
10030 P1=1064:P2=P1:C1=55336
10040 POKE650,128
10050 GETA$
10060 IFA$="Z"THENP2=P1-1:C1=C1-1
10070 IFA$="X"THENP2=P1+1:C1=C1+1
10080 IFA$=";"THENP2=P1-40:C1=C1-40
10090 IFA$="/"THENP2=P1+40:C1=C1+40
10100 IFA$="="THENPOKEC1,0
10110 IFA$="C"THENPOKEC1,14
10120 POKEP1,0:POKEP2,30
10130 P1=P2
10140 IFP1>1943THENP1=1943:C1=56215
10150 IFP1<1064THENP1=1064:C1=55336
10160 PRINT"{OR}{HOME}{CUR RT}{CUR RT}{C
UR RT}CHARACTER";P1;"{CUR RT}{CUR RT}{CU
R RT}{CUR RT}{CUR RT}COLOUR";C1
10170 GOTO10050
63000 PRINTCHR$(142)
63010 POKE52,48:POKE56,48:CLR
63020 POKE56334,PEEK(56334)AND254
63030 POKE1,PEEK(1)AND251
63040 FORI=0TO511:POKEI+12288,PEEK(I+532
48):NEXT
63050 POKE1,PEEK(1)OR4
63060 POKE56334,PEEK(56334)OR1
63070 GOTO10
```

TURN TO PAGE 104 FOR YOUR FREE INLAY CARD

WONDER WIDGETS

R.A.T.



SAY IT with words on the '64. Yes, Currah have now converted their highly popular Spectrum noise box, giving 64 owners the power to produce strangulated verbals from the speakers of their tellies.

Speech quality is an improvement on the Spectrum version but it is still relatively easily confused by long words or complicated phrase strings. For example, while "Make me a cup of coffee" comes out intelligibly and clearly, the vocals collapse rather on "supercalifragilisticexpialidocious" (admittedly a severe test), giving up after "fragil" and just pronouncing each subsequent letter individually.

Another small gripe concerns the dreaded ROM wobble. (Those with very long

FAMOUS RATS of history: The "dirty" one Cagney spoke of; Manuel's pet in Fawlty Towers; the early morning TV one called Roland. To this illustrious list may soon be added the one from Cheetah that controls your Spectrum.

R.A.T. — *Remote Action Transmitter* — is your actual infra-red controller. Look, ma, no wires! Cheetah reckon it'll put the joystick about level with the Dodo in terms of mass-appeal. But at nearly £30 a throw I don't think the Dodo's got much to worry about just yet. The R.A.T. consists of two parts. You hold the transmitter, an "ergonomically-designed" unit that looks like a reject from the model-making shop of Star Trek. It contrasts jarringly with the functional black box of the other part, the receiver, which plugs into the Spectrum's expansion slot.

The transmitter utilises two touch-sensitive pads (ex-ZX81 owners will feel right at home) for all control functions: a firing pad, with rapid-fire facility, and an eight-direction control pad below. Signals are fed to two infra-red diodes on the R.A.T.'s 'nose' and beamed directly to the receiver which can be anything up to 30ft away (for games playing at this distance binoculars are a necessary optional extra). The infra-red signals operate on a different frequency to TV remote control units so there's no fear of suddenly switching over to 'Dynasty' just when you've cracked the 60th screen of *Jet Set Willy*.

In action the R.A.T. works

memories will remember this phenomenon on the ZX81 rampacks.) So how anyone can undesign a cartridge for the 64 so that it sits in the vice-like cartridge socket and STILL wobbles — resulting in a re-setting of the beast — is beyond the ken of we mere hackers.

The speech unit also uses the monitor socket so the snobs with dedicated monitors won't be able to add this particular widget to their collection. The unit can echo the keyboard, or be used for speech from within BASIC. A SAY command is added; say "it with words" does. A small idiosyncrasy is that the rest of any multi-statement line (i.e. after the SAY command) is ignored. For machine code buffs full documentation is given on how to use the unit directly. The speech unit can be disabled so that non-speech programs which use the 4k area of memory (from 49152 upwards) which the unit uses, will run. It cannot, of course, be used with Simon's Basic or any other cartridges.

On the whole a very good package in a highly interesting new applications field — and, at £29.95, not bad value either.

DUNCAN GAMBLE

well. **Cheetah claim that it will work with 'most' Kempston-compatible games without any additional software and it seemed to do just that with most of the games it was tested on. Reaction times are fast and the angle of acceptance for the infra-red beam seems fairly wide.**

Having no moving parts to contend with takes some getting used to and a control disc just doesn't have the same tactile feel that a joystick gives — too many video game companies have discovered this.

Cheetah deserve a big hand for the R.A.T. It's innovative, it's easy to use — and it's British! But at £29.95 it's not going to take over the world just yet. — R.B.

DATAPEN LIGHTPEN

TRENDIEST LIGHT has got to be the lightpen. Budding Leonardos of the video age can be spotted instantly. The blank, expressionless stare caused by working within a centimetre of the CRT; the arthritic fingers from manipulating numerous key combinations while drawing.

Welcome, then, the Datapen lightpen, as seen on other micros and now appearing on the Spectrum for the first time. It's neat, relatively compact, simply plugs into the Spectrum's expansion slot and is ready to go. No dangling external battery packs or complicated key sequences to memorise.

All electronics are packed inside the pen body itself. A useful button on the outside switches in the computer only when you are satisfied the pen is in the correct position on the screen. A red LED on the back of the pen lights to confirm acquisition of valid video data.

Software included with the Datapen features an introductory program, a music composer, a user-defined graphics designer and a full hi-res drawing program. This is capable of producing pictures to pixel accuracy and includes pre-defined shapes for cicle, restangle and triangle drawing. Freehand drawing is, surprisingly, not catered for. The makers claim the program contains enough commands to make this ". . unnecessary".

In use the Datapen is comfortable to hold and very easy to control. Most programs use x, y-axis scanning bars which are fairly fast and don't require the pen to be held in position for long. A friendly bleep tells you all is well when an action is complete. The pen doesn't seem too bothered about exterior lighting conditions.

The Datapen lightpen is a worthwhile addition to the Spectrum artist's electronic palette. £29.00 buys you a ticket to creative contentment. — R.B.

POSHWARE CORNER

DELILAH IS wearing the very latest in off-the-shoulderware. Cut in daring, tear-proof Cordura nylon these new carrying bags from the House of Inmac are the very epitome of what's 'right' for the computer owner of taste.

Generous thick, high-density foam padding cradles snuggly the smooth form of the Apple II or Apricot computers — the machines that speak of 'class'. There are even matching accessory cases for disc drives and monitors. Designer handles and adjustable shoulder straps complement the whole ensemble and industrial grade zips add that working class touch that is considered *tres chic* in these troublesome times.

The 'low end' of the market, however, is catered for with a bag for the BBC. Well, we have to consider those more unfortunate than ourselves.

The Inmac Carry Cases come ready-to-wear for less than the price of a good meal at Fiorucci's. If we can be vulgar for the moment, they cost from between £17.00 to £27.50 each. — R.B.

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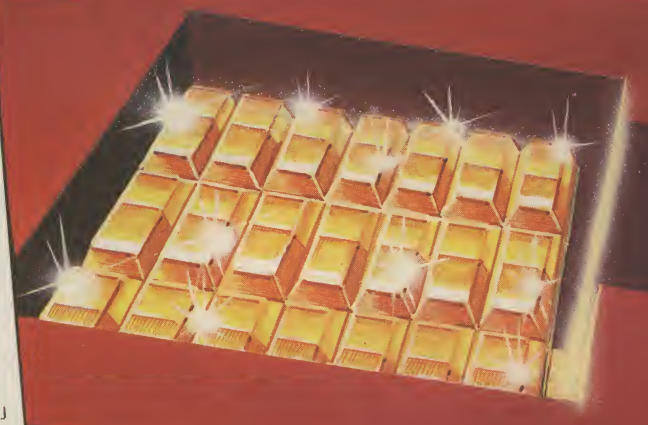
MAZE OF GOLD

There's gold in that thar maze! Type in this prog for almost instant riches. Use keys Z, X, ; and / for direction control.



```
1 A=7680
2 SC=0
3 POKE36869,255
5 POKE36879,9
10 TI$="000000"
15 PRINT"{CLR}{WHT}{CUR UP}       FE F
 EF E"
20 PRINT"EEEE EEEEEE EEEE EEEEE"
25 PRINT"{CUR UP}          E          EF"
30 PRINT"E EEEEEE EEEEEEEEEEE E"
35 PRINT"{CUR UP}                  E"
40 PRINT"EEEEEEE EEEEEE EEEEEEE"
45 PRINT"{CUR UP}F  EF
50 PRINT"E EEEEEEEEEEEEEEE EEE"
60 PRINT"EEEEEE EEEEEEEEE E E E"
65 PRINT"{CUR UP}              FE    F E   E"
70 PRINT"EEEE EEEEEE EEEEE E EE"
80 PRINT"E EEEEEEEEEEEEEEEEE E"
85 PRINT"{CUR UP}  F      EF "
90 PRINT"EEEEEEEE EEEEEE EEEEEE"
95 PRINT"{CUR UP} F        E  F    E
100 PRINT"EEEEEEEEEEEEEEEE EEEEE"
101 PRINT"{CUR UP}{CUR RT}{CUR RT}{CUR R
T}{CUR RT}{CUR RT}{CUR RT}{CUR RT}{CUR R
T}{CUR RT}{CUR RT}{CUR RT}{CUR RT}{CUR R
T}{CUR RT}{CUR RT}E E"
102 PRINT"{CUR RT}{CUR RT}{CUR RT}{CUR R
T}{CUR RT}{CUR RT}{CUR RT}{CUR RT}{CUR R
T}UITK{CUR RT}{CUR RT}EVE"
103 PRINT"{CUR RT}{CUR RT}{CUR RT}{CUR R
T}{CUR RT}{CUR RT}{CUR RT}{CUR RT}{CUR R
T}{CUR RT}{CUR RT}{CUR RT}{CUR RT}{CUR R
T}{CUR RT}EEE"
150 POKEA,4
155 GETA$
160 IFA$="Z"THENA=A-1:POKEA+1,32:GOTO400
0
165 IFA$="X"THENA=A+1:POKEA-1,32:GOTO400
0
170 IFA$=";"THENA=A-22:POKEA+22,32:GOTO4
000
175 IFA$="/"THENA=A+22:POKEA-22,32:GOTO4
000
180 IFPEEK(A)=5THEN1000
183 IFPEEK(A)=22THEN5000
185 IFPEEK(A)=6THEN2000
186 IFTI$>"000060"THEN3000
190 GOTO150
200 END
1000 POKE36879,27
1010 PRINT"{CLR}{PUR}{CUR DN}{CUR DN}{CU
R DN}{CUR RT}{CUR RT}{CUR RT}{CUR RT}LIM
 NJK{RED} OKNO !"
1015 PRINT"{CUR DN}{BLK}**********
******"
1020 FORT=1TO3000:NEXT
1025 GOTO1
2000 SC=SC+5
2010 GOTO150
3000 POKE36879,27
3010 PRINT"{CLR}{PUR}{CUR DN}{CUR DN}{CU
R DN}{CUR RT}{CUR RT}{CUR RT}{CUR RT}LIM
 JNP IMQ IR"
3015 PRINT"{RED}{CUR DN}{CUR RT}{CUR RT}
{CUR RT}{CUR RT}{CUR RT}{CUR RT}{CUR RT}
{CUR RT}QSTK.."
3020 PRINT"{CUR DN}{BLK}**********
******"
3023 PRINT"{CUR DN}{CUR DN}{CUR DN}{CUR
DN}{CUR RT}{CUR RT}{CUR RT}GHIJK-O"
3025 FORT=1TO3000:NEXT
3030 GOTO1
4000 POKE36878,15
4001 FORI=160TO240STEP5
4002 POKE36876,I
4003 FORM=1TO100:NEXTM
4004 POKE36876,0
4005 GOTO180
5000 POKE36879,27
5010 PRINT"{CLR}{PUR}{CUR DN}{CUR DN}{CU
R DN}{CUR RT}{CUR RT}{CUR RT}{CUR RT}{CU
R RT}{CUR RT}{CUR RT}{CUR RT}UITK."
5015 PRINT"{RED}{CUR DN}**********
******"
5020 PRINT"{BLU}{CUR DN}{CUR DN}{CUR DN}
{CUR RT}{CUR RT}GHIJK- ";SC
5030 FORT=1TO4000:NEXT
5040 GOTO1
```

NOTE: This is a TRANSLATED listing. All instructions in 'wavy' brackets (including the brackets) should NOT be typed in but followed, i.e. CUR RT = cursor right.

by G. Roberts for any VIC 20

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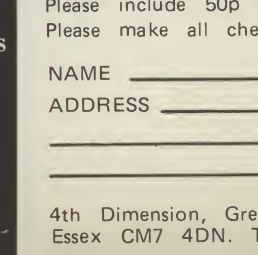

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3D ROTATION: The Next Move

LAST MONTH'S machine code allowed you to rotate the outline of a plane around your TV screen in 3D. Problem is, though, you're stuck with the plane whether you like it or not, and there's no particularly easy way to change it. Fortunately, my endeavour to correct this dreadful misdemeanour is here in the form of Listing 1. Simply rap it in and SAVE, making it auto-run from line 10. If you don't have a Microdrive, then don't bother with the drive, SAVE and LOAD routines at lines 5500-5570 and 6500-6560 respectively. If you don't have an Interface 1 connected then you'll find that the computer's a bit cagey about accepting some of those lines anyway. Immediately after the recording of Listing 1 make a copy of the machine code from last month's BIG K.

The program's a sort of 3D design/editor, allowing you to construct an object, watch it build up on the screen, view it from various different postions and at varying sizes. There are SAVE/LOAD options allowing you to store an object on tape or Microdrive and return to it at a later date, assuming it hasn't been accidentally wiped in the meantime. After loading Listing 1 (it will automatically load the machine code) you're greeted with, of all things, a black screen. At this point, you'd either load an object from tape/drive or start off from scratch by creating a new object. The program's driven by single key commands, as listed below. Simply press the appropriate key and the computer will do its stuff:

C – This one lets you change the current INK, PAPER and BORDER colours. Due to the problems created by the Spectrum's restrictive attribute system, it's not possible to make objects in multiple inks.

E – This is the End option. Press this and you'll get the 'STOP statement' report. If you inadvertently press this key then 'GOTO 100' will set you back on the right lines with no harm done.

Q – If you've got a ZX Printer then this should give you a screen copy.

S – This one lets you save your masterpiece to either tape (with the option of verifying) or to one of the 8 possible Microdrives (have you ever seen a Spectrum with 8 drives, 'cos I ain't?).

L – Lets you LOAD an object back in from tape/drive, "binning" any object you were working on at the time. So use with care.

M – Allows you to enlarge or diminish an object. After choosing which of the two possible options you require, you're asked for a magnification or diminishing factor. If you squash an object too much then you'll find that even when you re-magnify it to its former size it might look slightly different due to small rounding errors when it was a little 'un. Going to the other extreme, you'll find that your Spectrum won't be able to fit the whole object on the screen at one time. Getting a bit upset about this state of affairs it will refuse to draw any lines that don't completely fit on the screen, with some rather odd-looking results.

Keys: X, Y and Z — As with last month's demo prog, these keys allow you to rotate the object in the appropriate axis.

Digit keys 1 to 9 — Again, in common with last month's prog, these keys define how much the object rotates when you press one of the rotation keys.

The final three commands are associated with actually entering the data needed to construct an object. As I mentioned last month, 3D points are represented using x, y and z coordinates. The program uses the method of defining 3D objects as points joined (or not, as the case may be) by lines. Imagine that you had in your possession a piece of very rare and expensive 3D graph paper. Given the coordinates of a point on the paper, then you could place the tip of a pen in the appropriate position. Given another point you could draw a straight line from the first point to the second, or you could simply leave it blank. You could then continue in the same manner through a third and fourth point etc. This is exactly how the program builds objects up, using lines joining points in three dimensional space.

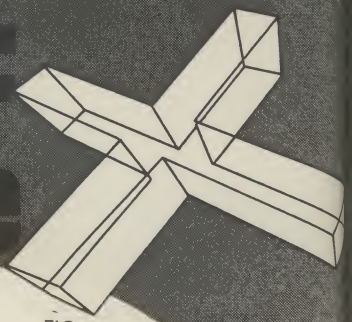
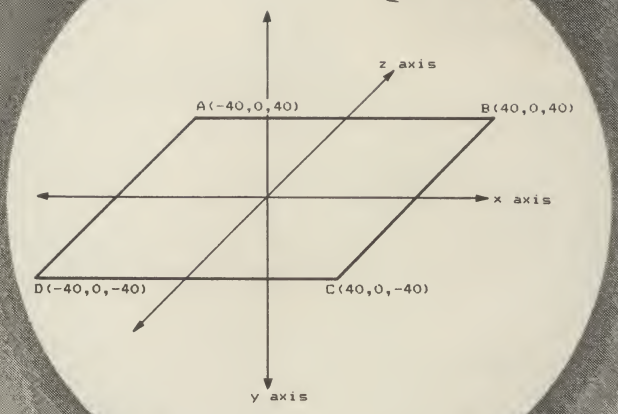


FIG 1



There's only one problem with this method; it isn't possible to draw curves. This is no great handicap, however, since in most applications you don't need to draw curves anyway and, when these are required, you can often form approximations of curves using several straight lines. The commands to construct objects are as follows:

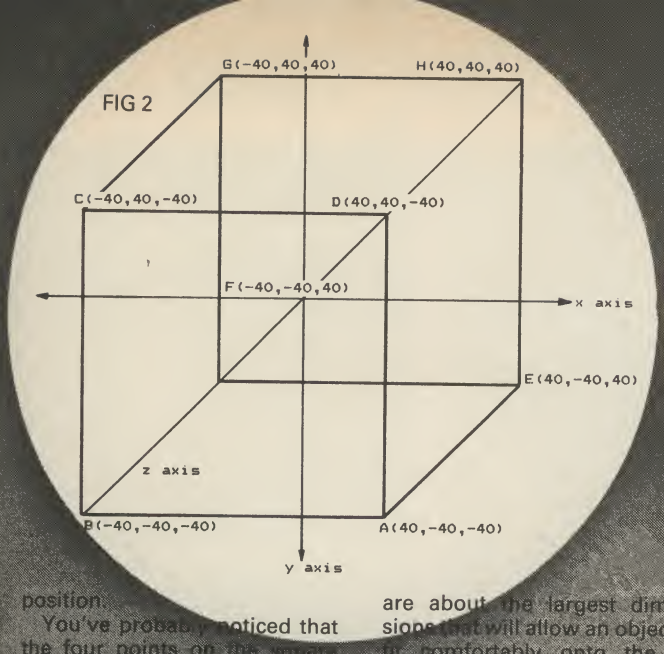
T – If you press this then the computer will ask for the x, y and z coordinates of the next point. The computer will then move its imaginary pen from its old position to the one specified, drawing a line as it goes.

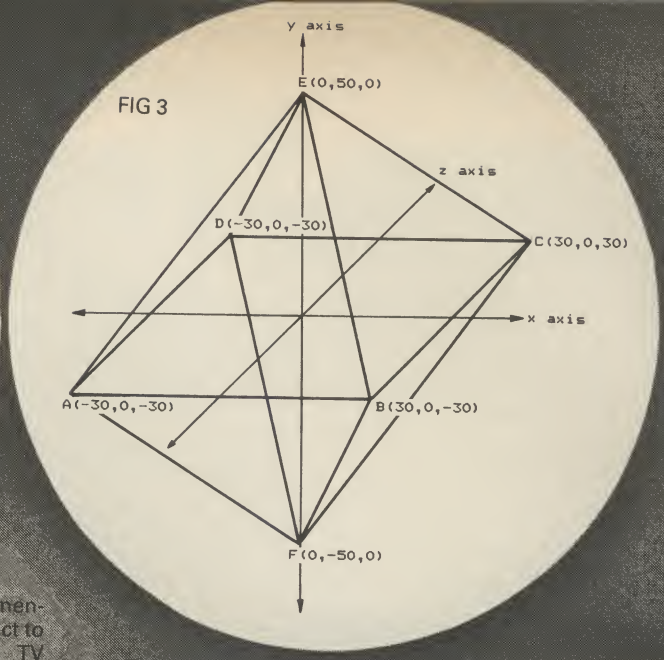
P – Much as the 't' command, except that the machine doesn't bother to actually draw in the line between the old and new points.

D – Press this and the last line or jump ('p' line) that you entered is instantly scrapped (if it's a line, then you'll actually see it disappear from the screen representation of the object).

There are many different ways of entering the data for an object into a program such as this. Some are easy for computers while others are easier for us humans. The method I've used is relatively simple for computers, but it's not the easiest of methods for us. However, since the object actually builds up on the screen as you enter the data for it, it's not hard to spot mistakes and quickly erase them using the 'd' command before they become too much of a problem.

Now to some real objects. The first simple example of an object is a plain old 2D square as shown in fig. 1. It has four points on it, so you need to enter five sets of data. "FIVE", I hear you exclaim. "Why five?" The answer is that to make objects rotate properly the origin must lie directly in an object's centre. The first set of coordinates simply allows you to move the pen from its resting position at the origin to the first point on the object. Even if you use 't' for the first entry, the computer doesn't draw a line from the origin since it knows that the first set of coordinates are simply there to get the pen in the correct starting





position.

You've probably noticed that the four points on the square have been marked A, B, C and D. To be certain that the pen visits every point composing an object and draws all the necessary lines it's a good idea to draw a picture of your object and work out your route beforehand, labelling the points you're going to 'visit' as you go. It's also useful to write down beside each point its coordinates, thus making the transferring of the object into the computer a simple matter of typing in the coordinates in the right order. The data for the square is given below. Simply type the preceding letter followed by the three coordinates in response to the computer's prompts.

p,−40,0,40 : t,40,0,40 :
t,40,0,−40 : t,−40,0,−40 :
t,−40,0,40

You can rotate the object even if it is in an uncompleted state and therefore watch new lines being added from any vantage point you like.

The next example, shown in fig. 2, is a cube. To make matters complicated, there are 12 lines to contend with but only 8 points. Unlike the square, it's not possible to draw it without going over a line twice. The data for the cube is as follows. Read across the page:

p,40,−40,−40 : t,−40,−40,−40 :
t,−40,40,−40 : t,40,40,−40 :
t,40,−40,−40 : t,40,−40,40 :
t,−40,−40,40 : t,40,40,40 :
t,40,40,40 : t,40,−40,40 :
p,−40,−40,−40 : t,−40,−40,40
p,−40,40,−40 : t,−40,40,40
t,40,40,−40 : t,40,40,40

The method I've used to draw it is to construct two squares parallel to one another, with one line joining them, and then go back with the 'p' command and draw in the neglected three lines. I'm sure that this method isn't the quickest and most efficient way, perhaps you would like to calculate the least number of moves you'd need to draw a cube.

Notice how both the objects are about 80 units in size — in height, width and depth. These are about the largest dimensions that will allow an object to fit comfortably onto the TV screen from all possible vantage points. If you do find that you've defined an object a shade too large then you can always squash it a bit with the 'm' command. There are definite maximum limits on the size of coordinates: 127 and 128 respectively.

The next object is a sort of crystal, two pyramids (one inverted) on top of each other. The crystal is shown in fig. 3 and the data is given below:

p,−30,0,−30 : t,30,0,−30 :
t,30,0,30 : t,−30,0,30 :
t,−30,0,−30 : t,0,50,0 :
t,30,0,30 :t,0,−50,0 :
t,−30,0,−30 : p,30,0,−30 :
t,0,50,0 : t,−30,0,30 :
t,0,−50,0 : t,30,0,−30

This object has a much better "flow" to it than the cube, allowing you to draw it completely only using one "p" command. Notice how, in certain orientations, the object looks rather strange. This effect is a result of the lack of hidden line suppression when drawing the object. As well as leading to a lack of solidity in the representation, it gives rise to arbitrary situations where it's impossible for the brain to work out whether one line is closer than another, with some weird results! Of course, there are ways and means of preventing hidden lines being drawn, but the methods are very mathematicaly involved and therefore painfully slow (even in machine code) on small micros such as the Spectrum. So unless you've got access to a mainframe, I'm afraid that hidden lines are here to stay. Thankfully, there are a few "cheat" methods — that rely solely on particular properties of an object to suppress hidden lines — that can usefully be employed.

The last 3D object example is a sort of "+" sign. It is the most complex of the objects — there are 28 lines. The data is shown in fig. 4. Notice how this object rotates a little more slowly than the others due to its greater complexity.

```
 10 REM ************************
 20 REM * 3D Rotater Program   *
 30 REM *  By Richard Taylor   *
 40 REM *       July,1984      *
 50 REM ************************
 60 REM
 70 BORDER 0: PAPER 0: INK 7
 80 CLEAR 58051: LOAD ""CODE
 90 CLS : GO SUB 9000: REM Init
ialise
 100 GO SUB 1000: REM Rotate obj
ect.
 110 IF a$="d" OR a$="D" THEN GO
 SUB 2000
 120 IF a$="m" OR a$="M" THEN GO
 SUB 3000
 130 IF a$="c" OR a$="C" THEN GO
 SUB 4000
 140 IF a$="s" OR a$="S" THEN GO
 SUB 5000
 150 IF a$="l" OR a$="L" THEN GO
 SUB 6000
 160 IF a$="e" OR a$="E" THEN ST
OP
 170 IF a$="p" OR a$="P" THEN GO
 SUB 7000
 180 IF a$="t" OR a$="T" THEN GO
 SUB 8000
 190 IF a$="q" OR a$="Q" THEN CO
PY
 200 GO TO 100
1000 REM Rotate Object
1010 IF o$<>"" THEN RANDOMIZE US
R 58084
1020 LET a$=INKEY$
1030 IF a$>="1" AND a$<="9" THEN
 LET step=VAL a$: BEEP .1,30: GO
 TO 1010
1040 IF a$="x" THEN LET a=step:
GO TO 1700
1050 IF a$="X" THEN LET a=-step:
 GO TO 1700
1060 IF a$="y" THEN LET a=step:
GO TO 1800
```

CONTINUED ON PAGE 100

3D ROTATION: The Next Move

Continued from page 99

```
1080 IF a$="z" THEN LET a=step:
GO TO 1900
1090 IF a$="Z" THEN LET a=-step:
 GO TO 1900
1100 RETURN
1700 POKE 58052,PEEK 58052+a
1710 LET b=PEEK 58052: IF b<180
THEN GO TO 1010
1720 IF SGN a=-1 THEN POKE 58052
,b-76
1730 IF SGN a=1 THEN POKE 58052,
b-180
1740 GO TO 1010
1800 POKE 58053,PEEK 58053+a
1810 LET b=PEEK 58053: IF b<180
THEN GO TO 1010
1820 IF SGN a=-1 THEN POKE 58053
,b-76
1830 IF SGN a=1 THEN POKE 58053,
b-180
1840 GO TO 1010
1900 POKE 58054,PEEK 58054+a
1910 LET b=PEEK 58054: IF b<180
THEN GO TO 1010
1920 IF SGN a=-1 THEN POKE 58054
,b-76
1930 IF SGN a=1 THEN POKE 58054,
b-180
1940 GO TO 1010
2000 REM Delete last line
2010 IF o$="" THEN RETURN
2020 LET o$=o$( TO LEN o$-4)
2030 BEEP .1,30: RETURN
3000 REM Magnify/diminish object
3010 INPUT "MAGNIFY OR DIMINISH?
 (M/D) "; LINE b$
3020 IF LEN b$<>1 THEN GO TO 301
0
3030 IF b$="d" OR b$="D" THEN GO
 TO 3100
3040 IF b$<>"m" AND b$<>"M" THEN
 GO TO 3010
3050 INPUT "MAGNIFICATION FACTOR
? ";a
3060 IF a<1 THEN GO TO 3050
3070 GO TO 3500
3100 INPUT "DIMINISHING FACTOR?
";a
3110 IF a<1 THEN GO TO 3100
3120 LET a=1/a
3500 INPUT INKEY$: PRINT #0; FLA
SH 1;"            PLEASE WAIT
    "
3510 IF o$="" THEN INPUT INKEY$:
 RETURN
3520 LET d$=o$: FOR d=2 TO LEN o
$ STEP 4
3530 FOR e=0 TO 2
3540 LET b=CODE o$(d+e)
3550 IF b<128 THEN LET b=b*a: IF
 b>127 THEN GO TO 3800
3560 IF b>127 THEN LET b=b-256:
LET b=b*a: LET b=b+256: IF b>255
 OR b<128 THEN GO TO 3800
3570 LET o$(d+e)=CHR$ b: NEXT e:
 NEXT d
3580 INPUT INKEY$
3590 LET d$="": RETURN
3800 INPUT INKEY$: BEEP 1,-30: L
ET o$=d$: LET d$="": RETURN
4000 REM Change colours
4010 INPUT "New BORDER colour? (
0-7) ";a
4020 IF a<0 OR a>7 THEN GO TO 40
10
4030 INPUT "New PAPER colour? (0
-7) ";b
4040 IF b<0 OR b>7 THEN GO TO 40
30
4050 INPUT "New INK colour? (0-7
) ";c
4060 IF c<0 OR c>7 OR b=c THEN G
O TO 4050
4070 BORDER a: PAPER b: INK c
4080 CLS : RETURN
5000 REM Save to Microdrive/Tape
5010 INPUT "SAVE TO MICRODRIVE O
R TAPE?      (M/T) "; LINE b$
5020 IF b$="" THEN GO TO 5010
5030 IF b$="m" OR b$="M" THEN GO
 TO 5500
5040 IF b$<>"t" AND b$<>"T" THEN
 GO TO 5010
5050 GO SUB 5800: REM Get name
5060 DIM x$(LEN o$): LET x$=o$:
SAVE c$ DATA x$()
5070 GO SUB 5900
5080 IF b$="n" OR b$="N" THEN RE
TURN
5090 IF b$<>"y" AND b$<>"Y" THEN
 GO TO 5070
5100 VERIFY c$ DATA x$(): RETURN

5500 GO SUB 5800
5510 INPUT "Which drive? (1-8) "
; LINE b$
5520 IF LEN b$<>1 THEN GO TO 551
0
5530 IF b$<"1" OR b$>"8" THEN GO
 TO 5510
5540 OPEN #4;"m";VAL b$;c$
5550 PRINT #4;o$
5560 CLOSE #4
5570 RETURN
5800 INPUT "Filename? "; LINE c$
5810 IF c$="" OR LEN c$>10 THEN
GO TO 5800
5820 RETURN
5900 INPUT "Do you wish to Verif
y? (y/n) "; LINE b$
5910 IF LEN b$<>1 THEN GO TO 590
0
5920 RETURN
6000 REM Load from Drive/Tape
6010 INPUT "LOAD FROM MICRODRIVE
 OR TAPE?   (M/T) "; LINE b$
6020 IF LEN b$<>1 THEN GO TO 601
0
6030 IF b$="m" OR b$="M" THEN GO
 TO 6500
6040 IF b$<>"t" AND b$<>"T" THEN
 GO TO 6010
6050 INPUT "Filename? (ENTER for
 first file) "; LINE c$
6060 IF LEN c$>10 THEN GO TO 605
0
6070 LOAD c$ DATA x$(): LET o$=x
$
6080 RETURN
6500 INPUT "Which drive? (1-8) "
; LINE b$
6510 IF LEN b$<>1 OR b$<"1" OR b
$>"8" THEN GO TO 6500
6520 GO SUB 5800
6530 OPEN #4;"m";VAL b$;c$
6540 INPUT #4;o$
6550 CLOSE #4
6560 RETURN
7000 REM Add new point
7010 GO SUB 7500
7020 LET o$=o$+CHR$ 0+e$
7030 RETURN
7500 INPUT "X displacement? ";a
7510 IF a<-128 OR a>127 OR a<>IN
T a THEN GO TO 7500
7520 IF SGN a=-1 THEN LET a=a+25
6
7530 INPUT "Y displacement? ";b
7540 IF b<-128 OR b>127 OR b<>IN
T b THEN GO TO 7530
7550 IF SGN b=-1 THEN LET b=b+25
6
7560 INPUT "Z displacement? ";c
7570 IF c<-128 OR c>127 OR c<>IN
T c THEN GO TO 7560
7580 IF SGN c=-1 THEN LET c=c+25
6
7590 LET e$=CHR$ a+CHR$ b+CHR$ c
7600 RETURN
8000 REM Add new line
8010 IF o$="" THEN GO TO 7000
8020 GO SUB 7500: LET o$=o$+CHR$
 1+e$
8030 RETURN
9000 REM Initialise
9010 LET o$=""
9020 LET step=3
9030 POKE 58052,0
9040 POKE 58053,0
9050 POKE 58054,0
9060 RETURN
```

DATA FOR '+':–

```
p,5,–5,–10 :
t,5,5,10 :
p,40,5,10 :
p,5,5,–10 :
t,–5,5,10 :
p,–5,40,10 :
p,–5,5,–10 :
t,–5,–5,10 :
p,–40,–5,10 :
p,–5,–5,–10 :
t,5,–5,10 :
p,5,–40,10 :

t,40,–5,–10 :
t,40,5,10 :
t,40,5,–10 :
t,5,40,–10 :
t,–5,40,10 :
t,–5,40,–10 :
t,–40,5,–10 :
t,–40,–5,10 :
t,–40,–5,–10 :
t,–5,–40,–10 :
t,5,–40,10 :
t,5,–40,–10 :

t,40,5,–10 :
t,40,–5,10 :
p,40,–5,10 :
t,–5,40,–10 :
t,5,40,10 :
p,5,40,10 :
t,–40,–5,–10 :
t,–40,5,10 :
p,–40,5,10 :
t,5,–40,–10 :
t,–5,–40,10 :
p,–5,–40,10 :

t,5,5,–10 :
t,5,–5,10 :
t,40,–5,–10 :
t,–5,5,–10 :
t,5,5,10 :
t,5,40,–10 :
t,–5,–5,–10 :
t,–5,5,10 :
t,–40,5,–10 :
t,5,–5,–10 :
t,–5,–5,10 :
t,–5,–40,–10 :
```

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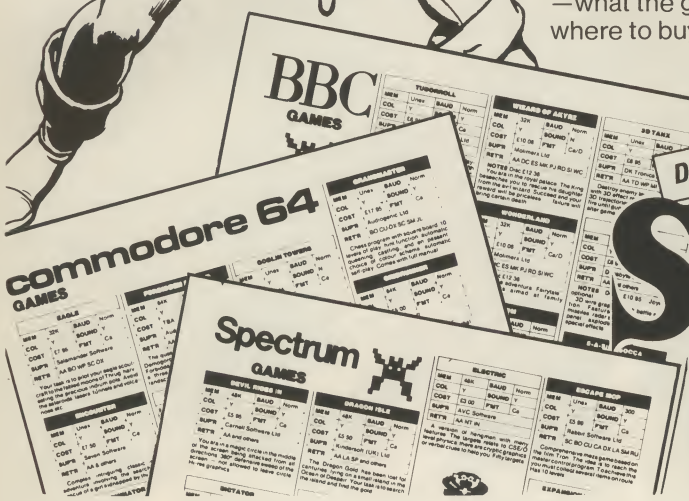

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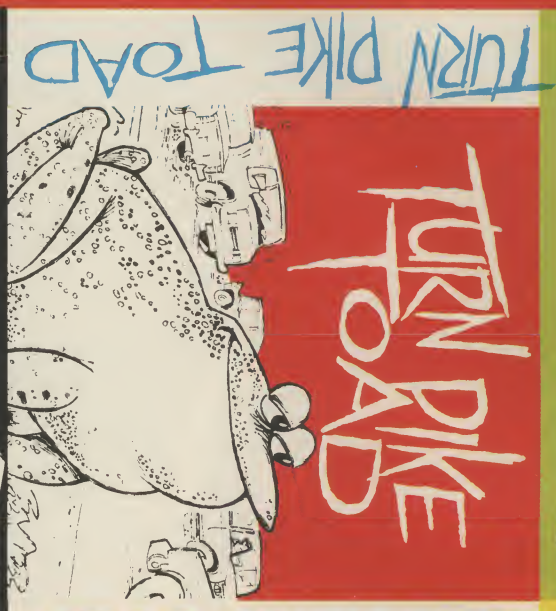

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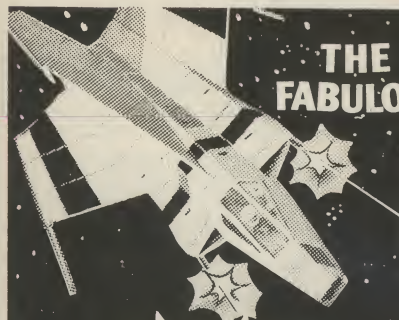

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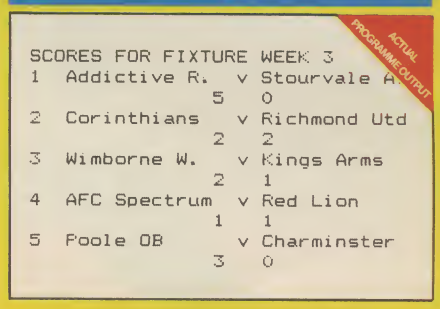

"A very useful utility program which allows anyone to run a League with ease. This professional program is designed to be used for almost any sport or game and has many features." E.g. Up to 30 teams per division ★ Match cancellation/award ★ League Tables calculated ★ Variable points systems etc. etc.

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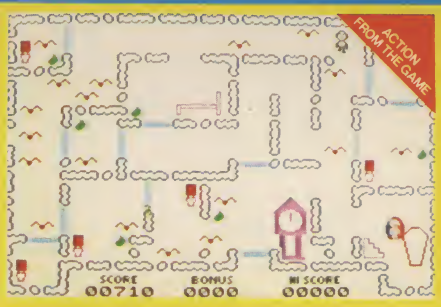

DRACULA'S CASTLE – "This is an amusing arcade game in which you must run around the castle to switch the lights on while avoiding the vampire bats. Beware of sleeping Dracula as lights wake him from his coffin. Can you survive till dawn!"

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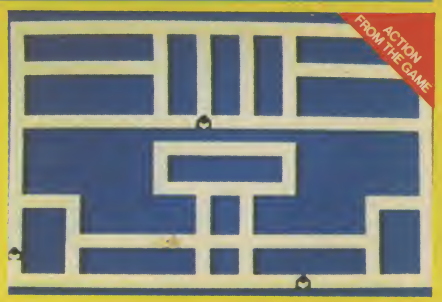

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```
10REM ************************
20REM Written and designed by
30REM .    James McPherson
40REM ************************
50:
60:
70?&72=50:?&73=&80
80MODE7
90VDU 23;8202;0;0;0;
100DIM S%(10),N$(10)
110FOR Q%=1 TO 10
120S%(Q%)=(11-Q%)*100
130N$(Q%)="James McPherson"
140NEXT
150PROCintro
160PROCsetup
170S%=15:FUEL%=300
180?&74=S%:J%=15
190?&76=J%-S%:SC%=0
200LIVE%=3
210PROCmove
220END
230:
240:
250DEF PROCsetup
260ENVELOPE 3,1,50,-75,25,3,3,3,126,0,
0,-1,126,126
270PRINT TAB(0,0);CHR$134;CHR$157;CHR$
132;
280PRINT TAB(0,1);CHR$134;CHR$157;CHR$
132;
290PRINT TAB(0,2);CHR$134;CHR$157;CHR$
132;"================================
==";
300FOR Q%=3 TO 24
310PRINT TAB(0,Q%);CHR$132;CHR$157;CHR
$147;
320NEXT
330PRINT TAB(5,1);"FUEL="
340PRINT TAB(12,1);"SCORE="
350PRINT TAB(30,1);"LIVES=3"
360PROCme
370ENDPROC
380:
390:
400DEF PROCmove
410X%=10:Y%=15
420XD%=10:YD%=4
430FLAG%=0
440C$=CHR$133+"A"
450REPEAT
460X1%=X%:Y1%=Y%
470FUEL%=FUEL%-1
480SC%=SC%+1
490PRINT TAB(10,1);FUEL%;" "
500PRINT TAB(23,1);SC%
510IF FUEL%<0 THEN PROCend
520PRINT TAB(X%-1,Y%);" "
530Y%=Y%-INKEY(-105)+INKEY(-73)+(Y%>20
)-(Y%<2)
540X%=X%-INKEY(-67)+INKEY(-98)-(X%<2)+
(X%>20)
550IF INKEY(-1) AND FLAG%=0 THEN XD%=X
%:YD%=Y%:FLAG%=1:ENVELOPE 1,3,-1,-2,4
,30,30,30,126,0,0,-2,126,126:SOUND 3,1,2
00,1:FUEL%=FUEL%-5
560IF ?(HIMEM+X%+(Y%*40))=255 THEN PRO
Cend
570PRINT TAB(X%,Y%);C$
580IF TIME>500 AND S%>3 THEN TIME=0:S%
=S%-1
590IF S%<6 THEN S%=6
600CALL&C00
610J%=J%+RND(5)-3+(J%>21)*2-(J%<S%+5)*
2
```

CAVERN BOMBER

by JAMES McPHERSON

```
620?&74=S%
630?&76=J%-S%
640IF RND(20)=1 THEN PRINT TAB(38,J%);
CHR$135;"^";
650IF FLAG%=0 THEN GOTO 460
660PRINT TAB(XB% 1,YB%);" "
670YB%=YB%+1
680P0%=?(HIMEM+XB%+YB%*40)
690IF YB%>22 OR XB%<2 OR P0%=255 THEN
FLAG%=0:SOUND 0, 15,2,3:GOTO 720
700IF P0%=94 THEN  ENVELOPE1,1,64, 96,
32,15,15,15,126,0,0, 1,126,126:SOUND 1,1
,100,3:FLAG%=0:PRINT TAB(XB%,YB%);" ":FU
EL%=FUEL%-100:SC%=SC%+10:GOTO 720
710PRINT TAB(XB%,YB%);"Y"
720UNTIL 0
730ENDPROC
740:
750:
760REM ** Type the machine code **
770REM ** in carefully or else  **
780REM **  it may destroy the   **
790REM **     whole program.    **
800:
810:
820DEF PROCmc
830FOR I%=0 TO 2 STEP 2
840P%=&C00
850LOPT I%
860LDA #&78
870STA &70
880LDA #&7C
890STA &71
900LDA #255
910STA &75
920LDX #22
930.LOOP1
940LDY#3
950.LOOP2
960INY
970LDA (&70),Y
980DEY
990STA(&70),Y
1000INY
1010CPY #39
1020BNE LOOP2
1030LDA &76
1040CMP #0
1050BNE LESS2
1060INC &76
1070LDA &74
1080CMP #0
1090BEQ LESS
1100LDA#147
1110STA&75
1120DEC &74
1130.LESS
1140.LESS2
1150DEC &76
1160LDA&72
1170CLC
1180ADC#1
1190STA&72
1200LDA&73
1210ADC#0
1220STA&73
1230LDA&75
1240STA(&70),Y
1250LDA#255
1260STA&75
1270LDA &70
1280CLC
1290ADC #40
1300STA&70
1310LDA&71
1320ADC#0
1330STA&71
1340DEX
1350BNE LOOP1
1360RTS:]
1370NEXT
1380ENDPROC
1390:
1400:
1410DEF PROCend
1420SOUND 0,3,200,1:SOUND 1,3,0,2
1430LIVE%=LIVE%-1
1440PRINT TAB(36,1);LIVE%
1450F%=0
1460FOR Z%=1 TO 23
1470IF ?(HIMEM+X%+(Z%*40))=147 OR ?(HIMEM
+X%+Z%*40)=32 THEN F%=F%+1
1480IF F%>S%/2 THEN Y%=Z%:Z%=23
1490NEXT
1500PRINT TAB(X% 1,Y%);CHR$135;"^"
1510FOR Q=1 TO 5000
1520NEXT
1530IF LIVE%>0 AND FUEL%>0  THEN ENDPRO
C
1540CLS
1550PROCw("You scored "+STR$(SC%),41)
1560PROCw("and had "+STR$(FUEL%)+" fuel
units left",44)
1570FOR Q=1 TO 7000
1580NEXT
1590PROChiscores
1600CLS
1610PROCw("Do you want another game <Y/
N>",42)
1620A$=GET$
1630IF A$="N" THEN CLS:END
1640IF A$<>"Y" THEN VDU7:GOTO 1610
1650CLS
1660GOTO 160
1670END
1680ENDPROC
1690:
1700:
1710DEF PROCw(W$,L%)
1720A%=18-LEN(W$)/2
1730IF L%>24 THEN L%=L% 30:GOTO 1760
1740PRINT TAB(A%,L%);CHR$R%;W$
1750ENDPROC
1760R%=RND(7)+128
1770A%=A%-1
1780FOR Q%=L% TO L%+1
```


Continued overleaf

THE GREAT SPACE

RACE
MOVI SOFT 2

Letters to BIG K

WANNA WIN A FIVER?

Yes, you too can join the formidable team of literati assembled on this here double-page spread and end up RICHER by FIVE WHOLE POUNDS! (If we publish your letter, that is.)

Scend your Scenario to . . .

Letterbase,
Big K
Room 2038
IPC Magazines Ltd
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Stamford Street
London SE1 9LS

IS THE WORLD'S SECOND BEST COMPUTER MAG BORING?

Congratulations on having the same 'whistle after me' attitude in computing as Daley Thompson has in sport. You've won the 1984 Steven Craig Best Laugh Award for your Rubber Keyboard feature (BIG K, Aug.). BIG K isn't just full of boring disassemblers and benchmarks like the weaklies.

I recently saw *Gremlins* on release in Canada, and I'm sending you some pics that weren't available for your 'Celluloid' feature (BIG K, Sept.). Let me tell you, *Gremlins* is a really great movie. Watch out for *Ghostbusters* too.

Can we please have a picture of you? I'm desperate to see what you look like.

Steven Craig,
Penilee,
Glasgow.

BELOW THE BELT

Has Tony Tyler got some personal reason for his vendetta against Atari? His latest onslaught on American magazines was totally inaccurate. Presumably he based his assumptions solely on the issues whose covers he reproduced. Assembler is covered in one of those issues, complete with listing. Other articles include listings in Forth and Action.

He obviously didn't find out much in the time he owned an Atari or he would have known that *Atari Connection* is the 'in-house' magazine that was sent free to all registered owners like Britain's *I/O*. As such, you can't expect to see much in it.

Finally, if these magazines are aimed at the novice how low is the market your magazine is aimed at?

Ken Ward,
Lakenham,
Norwich.

T.T. reacts:

●Vendetta? Onslaught? My love for Atari products knows no bounds — it is no exaggeration to say I would willingly lay down my life for Atari Corp. — while my ignorance of all this user group stuff (thank you for enlightening me, by the way) was based solely on the fact that Atari Corp. (for whom I would lay down my life) lent me my 800 (which is why I would cheerfully lay down my life, etc.) — and as a result I never got onto any subscriber lists. Therefore, etc.

As for what sort of level BIG K is aimed at . . . why, YOUR level, Ken. You read it, didn't you?

P.S. You haven't got a beard by any chance, have you?

AMSTRAD WRITES . . .

Shock horror. I read John Conquest's review of the noble Amstrad and wasn't at all sure what to make of it. He seems to have made some subjective assessments without the benefit of all the facts.

Firstly, it was designed by Roland Perry. He won't change his name for anyone — not even BIG K.

Amsoft has certainly taken a hard line with some software houses who were initially invited to participate in pre-launch development. When it looked as if the very expensive hand-built prototypes were not actually being put to good use, we repossessed them and gave them to other houses who've proved more vigorous.

All the firmware information necessary to write on the machine has been published well before we started advertising the hardware, so my conscience is clear. We naturally intend to handle as much software as possible since as you frequently observe, the availability of software is crucial to the success of a machine — and I'm rather relieved we didn't leave it up to those whose Ferraris and crates of Dom Perignon are now resting in the hands of receivers up and down the land. Firms with pretensions to even bigger things like Jumbo Jets make me even more nervous.

William Poel,
General Manager,
Amsoft.

ALL K'D UP AND NOTHING TO LOAD . . ?

I've just got a 48K Spectrum but don't know what software to buy. Please send me your recommendations for adventure and arcade-type games.

Mark Schutz,
Enderby,
Leicester.

●With over 5,000 recorded items of software available for the Spectrum, your best bet is to keep up to date with BIG K*'s reviews.*

COMPUTER SNOB WAR — EARLY WARNING

Isn't it about time that the sadistic, full-scale, bloody battle between different computer owners is stopped? Everywhere I go I hear "Look at the Spectrum keyboard! How utterly yuck!" or "Oh. The BBC has the very best BASIC, ahem." I own a CBM 64 and am always being persecuted for my 'prehistoric BASIC'.

But what are they getting their knickers in a twist about? They don't have to use it. Surely one computer is as good as another to its user. We all have to get to grips with our machine's good and bad points. So who cares what computer they have next door?

Trevor O'Grady,
London SE2.

I recommend the following musical accompaniment for these games:

Jet Set Willy (Our House — Madness)
Atic Atac (Thriller — Michael Jackson)
Sabre Wulf (In The Jungle — Tight Fit)
Micro Olympics (Gold — Spandau Ballet)
Lunar Jetman (War Head — UK Subs)
Chequered Flag (Driving In My Car — Madness)
Jet Pac (Walking On The Moon — The Police)

Simon Curtis,
Basingstoke,
Hants.

●How about playing "Imagine no possessions . . ." for a certain

TONY BENYON

LETTERBASE ETT

Edited by NICKY XIKLUNA

Liverpool software company? (ex). I've heard it's good music to move to . . .

A question for disassembling folk: Who has an infinite lives POKE for Ocean's *Moon Alert*? Zem, Squornshellous Zeta.
A. G. Gatner,
Guildford,
Surrey.
●*And what do you have for breakfast, A.?*

In answer to last month's question on how to kill the dragon in *Twin Kingdom Valley*. Get the 'Staff of Power' off the witch in one of the other towers.
Gerald McLaren,
Glasgow.

SABRE GOOF

Have you spotted the mistake in issue six's *Sabre Wulf* map? You only showed four possible amulet sites, whereas I've found at least 16. Here's my tip list:

Use the red, blue and purple (disorientation) orchids as much as possible. Ignore all small-fry treasure in corridors and rooms. They may increase your score, but they don't enhance your chances of either finding the Amulet pieces or your 'percentage of game completed' score. You'll lose valuable lives trying to collect these pieces of rubbish!

Collect all the red statues. They give extra lives (nine max). Don't fully enter a room unless it contains a useful item. The penalty is probable loss of life.

If you don't have all four amulet pieces upon entering the Temple — you have no defence against the Guardian. Always use an orchid before entering the Wulf's corridor. Remember! You have no defence against the Wulf.

No joystick means no chance of getting a good score. Only take your finger off the fire button in emergencies.

You can't kill the natives! It is better to bash them once with your sword (as with the large animals). Then they'll buzz off in another direction.

Make full use of pause control whenever you find a piece of the Amulet. Assess your position in the room — as the creatures will go for you something terrible!
David Parr,
Washington,
Tyne and Wear.
●***Countless thousands pointed out the* Sabre Wulf *goof in our map. There was a dead-end where a door should have been. The culprits are now safely incarcerated in the Tomb of Gloom, one level below the Tower of Power. Thanks for timely correctives from — Jeremy Diccox, Tim Bailey, Andrew Brown, Douglas Nolan, Colin Grahamshaw and Carol Nolan to name but a few.***

WULF SABRED . .

I have discovered a sure-fire way to conquer *Sabre Wulf* and get to the final screen. I am giving you my theory in response to your request for tips in No. 6. My map is divided into grid squares numbered from O to F on each axis in the hexadecimal base, so that each square can be referred to by a two digit number. So you start at 8A.

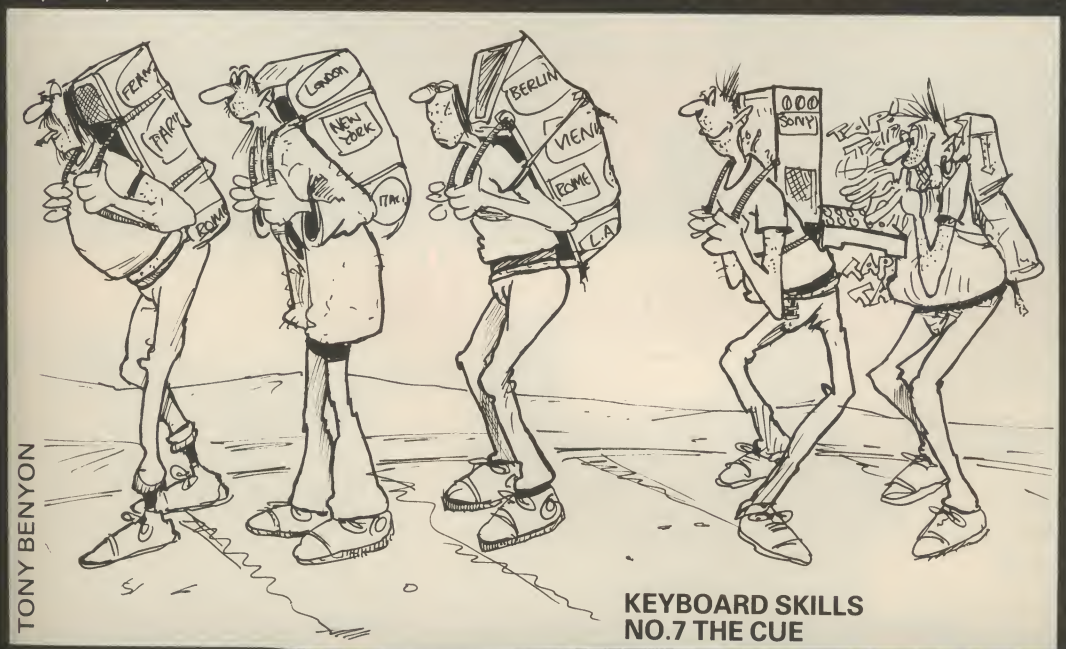
Amulet positions can be found in six different places. For example, if you find your first piece in square 7A, the other pieces will be in squares 2E, 19 and 95. Each of the six positions containing the six pieces are shown in the table below:

Route no.	1st piece	2nd piece	3rd piece	4th piece
1	7A	2E	19	95
2	9A	3C	53	D4
3	7E	34	93	85
4	B	3A	53	62
5	CA	D9	D2	62
6	1E	25	44	D2

The initial player problem is to find the first piece of the Amulet which will be in the first column. Then it's just a matter of finding the others and passing the keeper of the Temple. Most readers should be able to do this, although it takes some practice.
P. Weldon,
Rhyl,
Clwyd.

PIRACY BORE

I work in a computer shop and a lot of piracy comes to our attention. Let's face it, it's not that prices are too high. It's just that punters prefer not to pay. Remember — piracy lengthens the dole queues of the future!
P. Clevett,
Tadworth,
Surrey.
●***That's enough piracy for one issue.***



GULPO

SOMETIMES these things happen. A guy writes something. It's good. You print it. Then comes Headline time. And the guy who knows who actually wrote the piece is off on holiday, while the guy left behind — who doesn't know — assumes it was written by the guy he expected it to be written by.

Yes, folks, this is the real — the true — story behind the Great Atari Player Missile Louse-up. It *wasn't* written by ace Staines programmer Nigel Farrier (as we said). It was written by ace Scots programmer Alex Boitz. Grovelling apologies to both.

The other miserable self-shaft in recent times involved the absolutely ace conversion of the PET original CBM Golf game by Jon Bull. We had this ongoing industrial dispute, see, and following the any-port-in-a-storm principle, we out farmed the layout to a freelance artist. Now this chap is a worthy chap but he didn't fully appreciate that lines have to be in the right order. (He has since been shot.) So . . . if any CBM owners out there are having more than the usual difficulty running this game, just contact us and we'll send you an intact listing.

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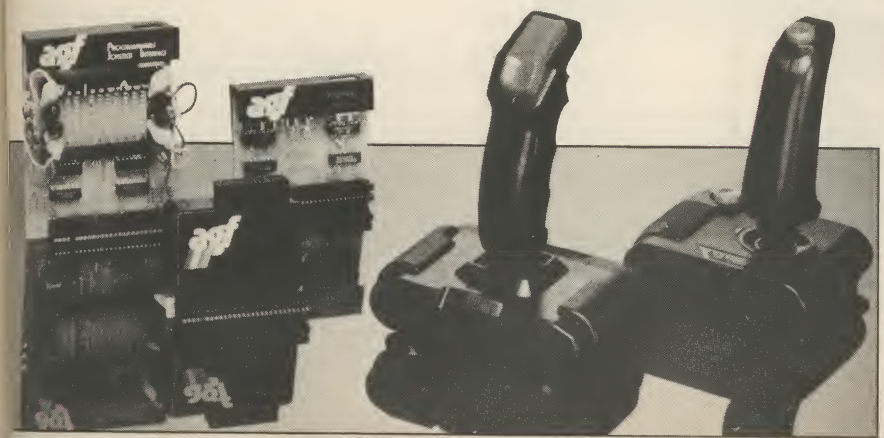

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CONTINUED FROM P.83

```
ER 1;"  ";AT 13,13;"  ": BEEP a,
3: PRINT AT 12,13; PAPER 0; BRIG
HT 0;"▗ ";AT 13,13;"▝ "
6137 IF i$="4" THEN PRINT AT 12,
15; INK 0; PAPER 4; BRIGHT 1; OV
ER 1;"  ";AT 13,15;"  ": BEEP a,
4: PRINT AT 12,15; PAPER 0; BRIG
HT 0; INK 4;"▗ ";AT 13,15;"▚"
6138 GO TO 6130
6140 PRINT AT 15,13; INK 7; PAPE
R 0; OVER 1;"                ": GO S
UB 6500
6150 PRINT AT 17,0; INK 6;" If y
ou get into dificulties youcan p
ress key "c"{clue or cheat}this
will then play the sounds  but n
ot print the colours.": GO SUB 6
500
6155 PRINT AT 19,7; INK 6;"G O O
 D   L U C K !": GO SUB 6500: RET
URN
6160 GO SUB 6500: RETURN
6500 DIM y$(128): LET z$="-=<PRE
SS ANY KEY TO CONTINUE!>=-"
6510 PRINT #0;AT 1,0; INK 1; PAP
ER 7; BRIGHT 1;z$: PRINT AT 2,0;
 INK RND*4+4; PAPER 0; OVER 1;y$
6520 LET z$=z$(2 TO )+z$(1): IF
INKEY$<>"" THEN POKE 23606,0: GO
 TO 6550
6530 GO TO 6510
6550 INPUT "";: FOR f=7 TO 0 STE
P -1: FOR g=Z TO 21: PRINT AT g,
0; INK f; PAPER 0; OVER 1;"
                ": BE
EP .002,g+f: NEXT g: BEEP .02,g+
f: NEXT f
6560 FOR f=Z TO 21: PRINT AT f,0
;"
  ": NEXT f
6570 RETURN
6999 STOP
7000 CLS : PRINT AT 2,4; INK 4;
BRIGHT 1;"
```

SIMON

```
"
7010 PRINT INK 5;'"  © Anthony J
 Shaw 27:04:84"
7015 LET s$="welkum t(ouu) s(ii)
mon": PAUSE 110: LET s$="riten b
(ii) antun(ee) j(ay)mz (sh)(or)"
: PAUSE 150
7020 DIM q$(2,11): LET q$(1)="Do
 you want": LET q$(2)="ructions
?": LET o$=" the inst"
7030 FOR f=11 TO 1 STEP -1: PRIN
T AT 10,0;q$(1,f TO );AT 10,19+f
;q$(2, TO 11-f);AT 9+f,11;o$;AT
10+f,11;"                ": BEEP .1,f:
NEXT f
7040 FOR f=0 TO 12: PRINT AT 12,
f; INK 3;" [y/n]": BEEP .005,f:
NEXT f
7045 LET s$="w(uh)(dd) y(ouu) t(
ii)k (dth)(ee) instru(ck)(ch)onz
"
7046 PAUSE 165: LET s$="ans(er)
(yy)es (or) n(oo)": PAUSE 100
7050 PRINT AT 2,4; INK RND*4+4;
BRIGHT 1;"
```

SIMON

```
"
7050 LET a$=INKEY$: IF a$<>"y" A
ND a$<>"n" THEN GO TO 7050
7060 IF a$="n" THEN LET no=1: RE
TURN
7080 LET no=0: RETURN
9000 RESTORE 9010: FOR f=USR "a"
 TO USR "q"-1: READ a: POKE f,a:
 NEXT f: RETURN
9010 DATA BIN 0000,BIN 0000,BIN
0001,BIN 0011,BIN 0110,BIN 1110,
BIN 0000,BIN 0000,BIN 0000,BIN 0
000,BIN 0000,BIN 0000,BIN 0000,B
IN 1111,BIN 1111,BIN 0000
9015 DATA BIN 0000,BIN 11000000,
a,a,a,a,a,a,a,a,a,a,BIN 111100
00,BIN 11110000,0
9020 DATA BIN 0000,BIN 0011,BIN
0011,BIN 0100,BIN 1100,BIN 1000,
BIN 0000,BIN 0000,BIN 0001,BIN 0
011,BIN 0110,BIN 1100,BIN 1100,B
IN 1111,BIN 1111,BIN 0000
9025 DATA BIN 0000,BIN 11000000,
BIN 11000000,BIN 00100000,BIN 00
100000,BIN 00100000,BIN 01100000
,BIN 11000000,BIN 10000000,BIN 0
000,BIN 0000,BIN 0000,BIN 0000,B
IN 11110000,BIN 11110000,BIN 000
0
9030 DATA BIN 0000,BIN 0011,BIN
0011,BIN 0100,BIN 1100,BIN 1000,
BIN 0000,BIN 0011,BIN 0011,BIN 0
000,BIN 1000,BIN 1100,BIN 0100,B
IN 0011,BIN 0011,BIN 0000
9035 DATA BIN 0000,BIN 11000000,
BIN 11000000,BIN 00100000,BIN 00
100000,BIN 00100000,BIN 01000000
,BIN 10000000,BIN 10000000,BIN 0
1000000,BIN 00100000,BIN 0010000
0,BIN 00100000,BIN 11000000,BIN
11000000,BIN 0000
9040 DATA BIN 0000,BIN 0001,BIN
0011,BIN 0110,BIN 1100,BIN 1100,
BIN 1100,BIN 1100,BIN 1100,BIN 1
100,BIN 1111,BIN 1111,BIN 0000,B
IN 0000,BIN 0000,BIN 0000
9045 DATA BIN 00000000,BIN 10000
000,BIN 0000,BIN 0000,BIN 0000,B
IN 0000,BIN 0000,BIN 0000,BIN 11
000000,BIN 11000000,BIN 11110000
,BIN 11110000,BIN 11000000,BIN 1
1000000,BIN 11000000,BIN 0000
9999 REM
```

USER DEFINED GRAPHICS

A = ◢	B = ▄	C = ▌	D = ▙
E = ◤	F = ◣	G = ▐	H = ▟
I = ◣	J = ▚	K = ▐	L = ▐
M = ◤	N = ▛	O = ▝	P = ▜

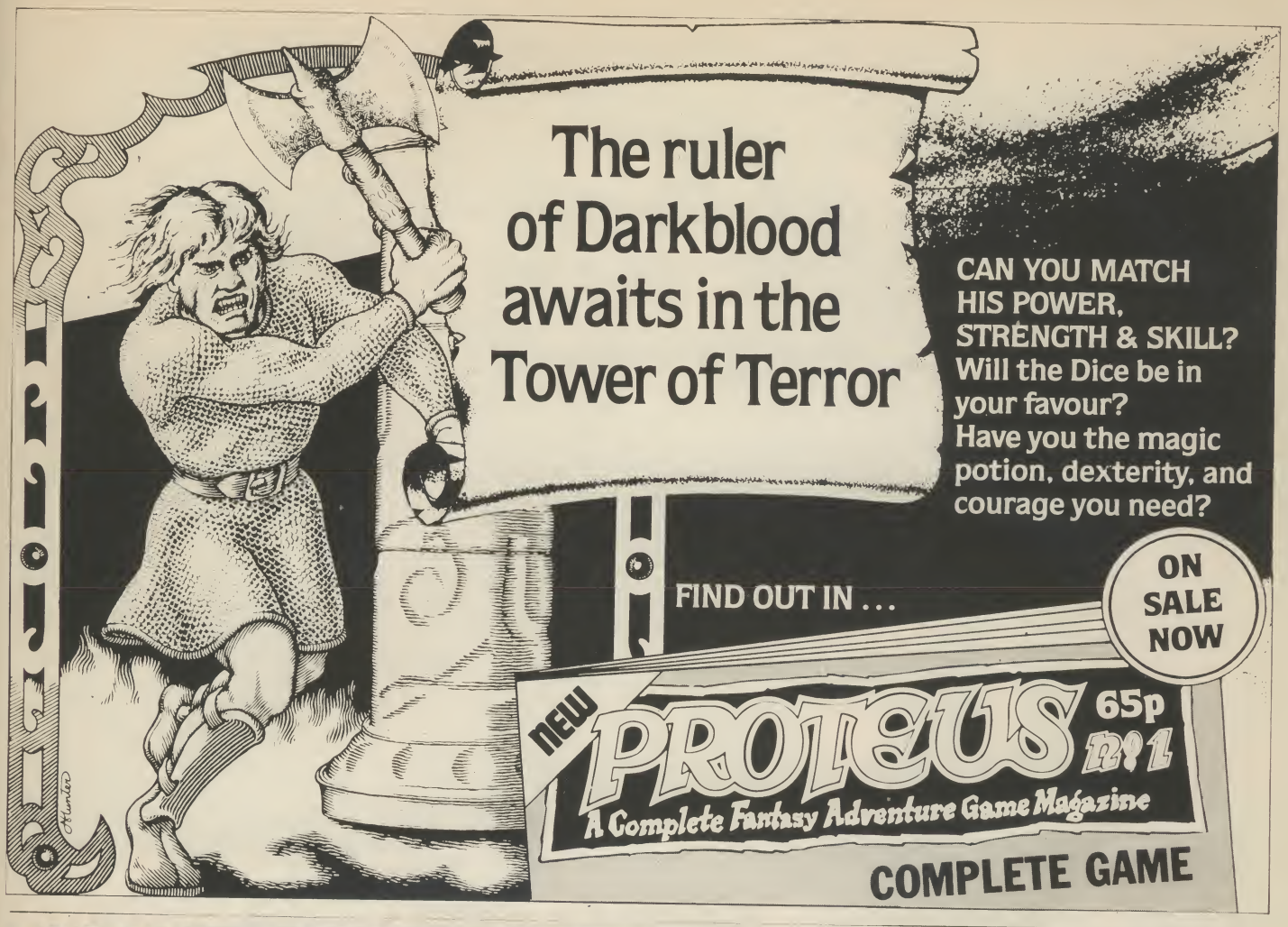
AC = 1	EG = 2	IK = 3	MO = 4
BD =	FH =	JL =	NP =

THE END

CAVERN BOMBER

CONTINUED FROM P.109

```
 1790PRINT TAB(A%,0%);CHR$R%;CHR$141;W$
 1800NEXT
 1810ENDPROC
 1820:
 1830:
 1840DEF PROCintro
 1850RESTORE 1970
 1860REPEAT
 1870READ W$
 1880IF W$="NP" OR W$="END" THEN 1920
 1890READ L%
 1900PROCw(W$,L%)
 1910UNTIL 0
 1920IF W$="NP" THEN PROCw(CHR$136+"Pres
s any key to continue",23):A=GET:CLS
 1930UNTIL W$="END"
 1940ENDPROC
 1950:
 1960:
 1970DATA Bomber,38,======,40,by,43,Jame
s McPherson,47,"NP"
 1980DATA "You are in an aircraft, which
 is",5,"flying in an ever narrowing tunn
el.",6
 1990DATA "BOMBER",31,"You have to contr
ol the craft",8,"to avoid hitting the ro
cks above",9,"and below you.",10,"Added
 to your problems is the fact",13,"that y
ou fuel is running out",14,"and the only
 way to gain more",15
 2000DATA "fuel is to destroy fuel dumps
 ( ^ )",16,"on the ground.",17,"NP"
 2010DATA "CONTROLS  ",36,"Z.....left ",
10,"X.....right",12,"*.....up    ",14,"?.
....down ",16,"<SHIFT>...fire",18,"NP","
END"
 2020:
 2030:
 2040DEF PROChiscores
 2050UNTIL -1
 2060IF SC%<S%(10) THEN GOTO 2240
 2070PLACE=0
 2080FOR Q%=1 TO 10
 2090IF SC%>S%(Q%) THEN PLACE=Q%:Q%=10
 2100NEXT
 2110CLS
 2120PROCw("Congratulations !!",41)
 2130PROCw("You are "+STR$(PLACE)+" out
of 10",44)
 2140PROCw("Please put in your name",47)
 2150PRINT TAB(10,21);
 2160*FX15 0
 2170INPUT N$
 2180FOR Q%=9 TO PLACE STEP -1
 2190S%(Q%+1)=S%(Q%)
 2200N$(Q%+1)=N$(Q%)
 2210NEXT
 2220N$(PLACE)=N$
 2230S%(PLACE)=SC%
 2240CLS
 2250PROCw("Hiscores",30)
 2260FOR Q%=2 TO 11
 2270PRINT TAB(0,Q%*2-1);CHR$(128+RND(7)
);Q%-1;TAB(12);S%(Q%-1)
 2280PRINT TAB(23,Q%*2-1);N$(Q%-1)
 2290NEXT
 2300PROCw("Press any key to continue",2
3)
 2310*FX15 0
 2320A=GET
 2330ENDPROC
>
```



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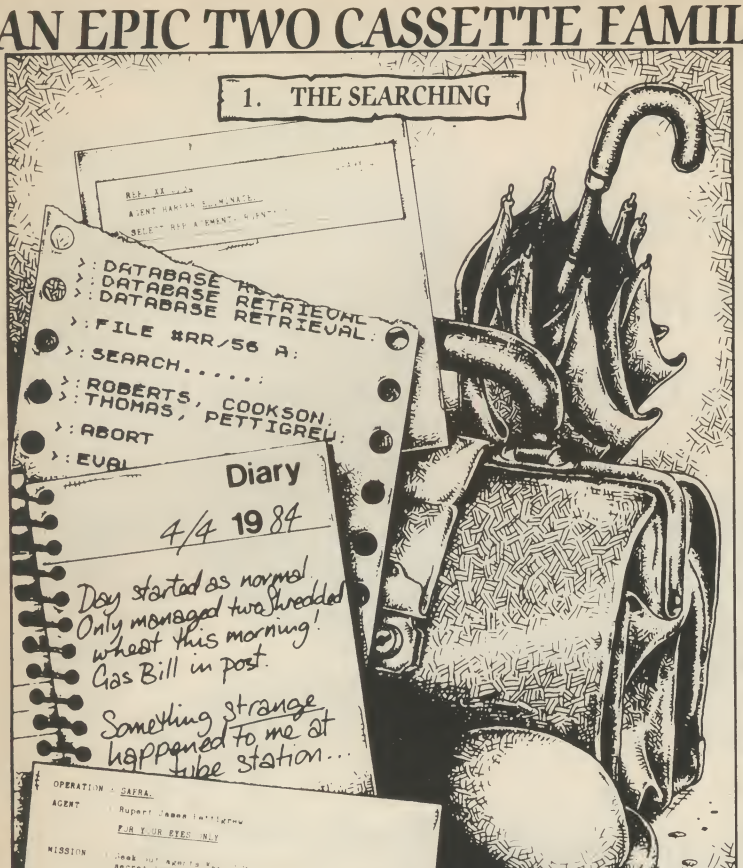

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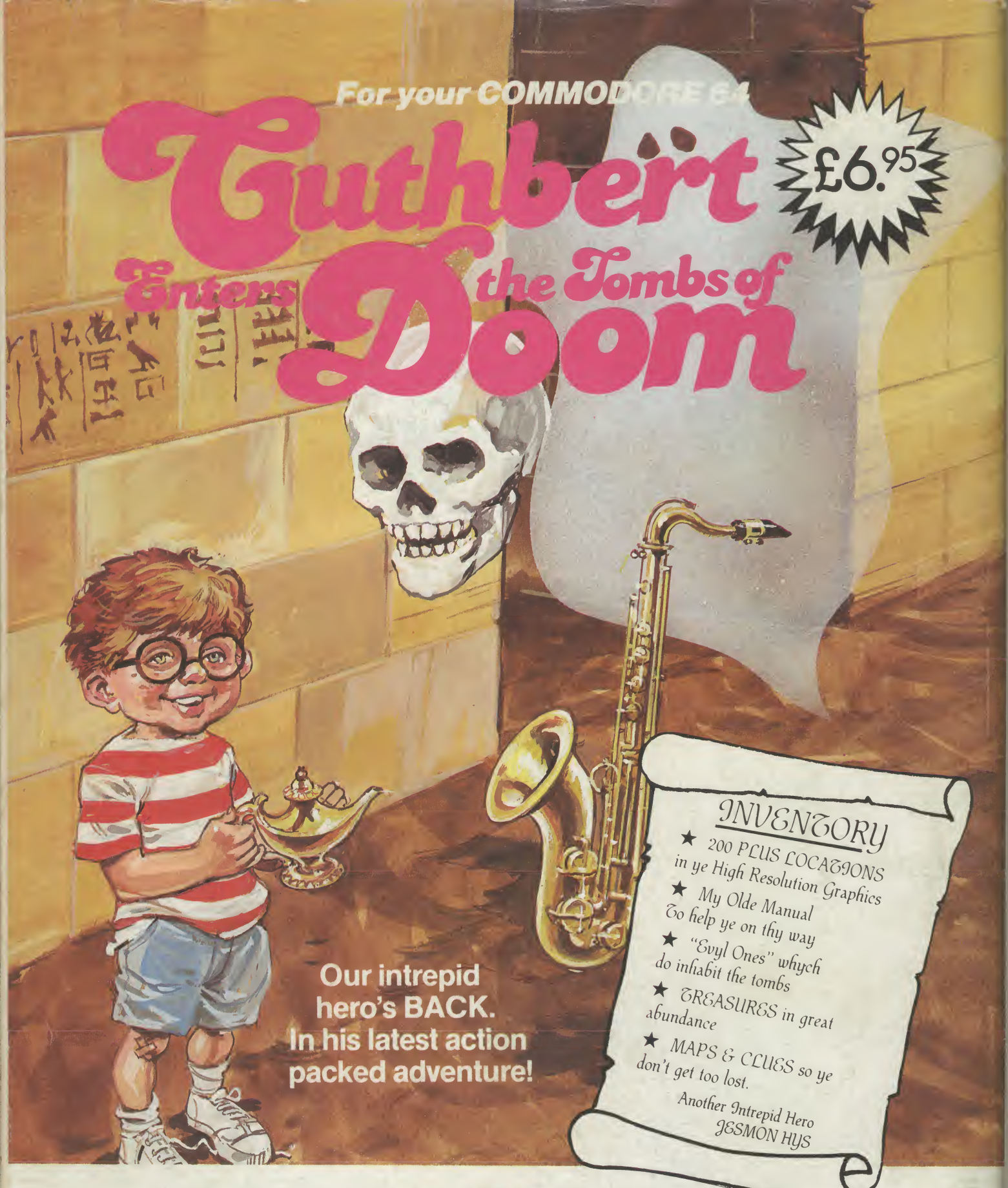

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